



**Huntington Power Plant**

*6 miles west of Huntington, Utah on Hwy. 31  
P.O. Box 680  
Huntington, Utah 84528*

July 21, 2016

Mr. Bryce Bird, Director  
Utah Department of Environmental Quality  
Division of Air Quality  
195 North 1950 West  
P. O. Box 144820  
Salt Lake City, Utah 84114-4820

Attn: Mr. Norm Erikson

RE: 2016 Unit 1 RATA Report

Dear Mr. Bird,

The Annual Source Emission Test Reports, or Relative Accuracy Test Audits (RATAs) of the Continuous Emissions Monitoring Systems (CEMs) in service at the PacifiCorp Huntington Plant Unit 1 have been completed per the specifications found in 40 CFR Part 60 and 75. The mid-, and high-load Flow RATAs, along with the Gas and Mercury RATAs were conducted June 29, 2016 on Unit 1.

Enclosed is the RATA report for the Huntington Plant Unit 1 Flow, Gas, and Mercury CEMs.

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of the law that I have personally examined, and am familiar with, the statements and information submitted in this document and its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Should you have any questions or concerns, please contact Richard Neilson at (435) 687-4334.

Sincerely,

A handwritten signature in black ink, appearing to read "Darrell J. Cunningham".

Darrell J. Cunningham  
Managing Director –Huntington Plant  
Responsible Official

Enclosures: "Emissions Testing Report for PacifiCorp Huntington Unit 1"

cc: Director - EPA Region VIII w/enclosure  
Richard Neilson – Huntington Plant w/ enclosures  
Dave Barnhisel – NTO w/o enclosures  
Frank Zampedri – NTO w/o enclosures



Emissions Testing Report for  
PacifiCorp  
Huntington Unit 1  
Huntington, Utah

Test Date: June 29, 2016

Project Code PC16-0031

5160 Parfet Street  
Suite A3  
Wheat Ridge, CO 80033



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Toll Free (800) 984-9883  
Fax (888) 605-0243  
[www.stacktest.us](http://www.stacktest.us)

## Certification Statement

I certify that all field data were acquired under my direction in accordance with a system designed to assure data quality. Based on reasonable inquiry, the information submitted is to the best of my knowledge true, accurate and complete.

A handwritten signature in black ink, appearing to read "Andrew Bruning".

Andrew Bruning  
Senior Project Manager  
Emissions Measurement Company

I certify that this document and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on reasonable inquiry, the information submitted is to the best of my knowledge true, accurate and complete.

A handwritten signature in black ink, appearing to read "Matthew Parks".

Matthew Parks  
Technical Director  
Emissions Measurement Company

## **Introduction**

EMCo was contracted by PacifiCorp to conduct source testing services at the Huntington Power Plant near Huntington, Utah. The Huntington Plant comprises two pulverized coal-fired boilers, each equipped with low-NOx burners and overfire air for nitrogen oxides (NOx) control, a flue gas desulfurization (FGD) scrubber for sulfur dioxide (SO<sub>2</sub>) control and pulse-jet fabric filters for PM control. In accordance with Utah Department of Environmental Quality (UDEQ) Operating Permit 1501001004, the Unit #1 exhaust stack is equipped with Continuous Emission Monitoring Systems (CEMS) to quantify carbon dioxide (CO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) emissions. Each unit is also equipped with a CEMS to quantify mercury (Hg) emissions. Unit #1 is also equipped with a CEMS to quantify carbon monoxide (CO) emissions. Monitoring system information is given in the table below.

Monitor Location	Parameter	Monitor Make /Model	Part 75 Monitor ID
Huntington Unit 1	Flow	Teledyne Monitor Labs Model 150	105
	CO <sub>2</sub>	Thermo Fisher Model 410i	113
	SO <sub>2</sub>	Thermo Fisher Model 43i	111
	NO <sub>x</sub>	Thermo Fisher Model 42i	112
	CO	Thermo Fisher Model 48i	—
	Hg	Thermo Fisher Model 80i	—

Testing was conducted to satisfy state and federal quality assurance requirements. Contact information for the project is listed in the table below.

Contact	Affiliation	Telephone	E-mail
Frank Zampedri Environmental Analyst	PacifiCorp	(801) 220-2169	frank.zampedri@pacificorp.com
Richard Neilson Environmental Engineer	PacifiCorp	(435) 687-4334	richard.neilson@pacificorp.com
Norm Erikson Environmental Scientist	UDEQ	(801) 536-4063	nerikson@utah.gov
Andrew Bruning Senior Project Manager	EMCo	(303) 810-2168	abruning@stacktest.us

## **Scope of Work**

Relative accuracy test audits (RATAs) were performed in accordance with 40 CFR Part 75 on the Unit #1 Exhaust CEMS. RATA testing was performed at high load to determine the relative accuracy of the Volumetric Flow Rate, CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub> and Hg CEMS in accordance with the annual RATA requirements of 40 CFR Part 75 Appendix B, §2.3.1.2(a). Volumetric Flow Rate RATA testing was also performed at mid load. RATA testing was also performed in accordance with 40 CFR Part 60 on the Unit #1 SO<sub>2</sub>, NO<sub>x</sub> and CO CEMS. The details of each test are given in the table below.

Source	Location	Regulation	Test Type	Load Level*	Parameter
Huntington Unit 1	Outlet	40 CFR Part 75	RATA	High	SO <sub>2</sub> (ppmvw)

\*High Load is defined as 408-520 MWg at Unit #1, and Mid Load is defined as 324-408 MWg.

Abbreviations:  
ppmvw: parts per million, wet volume

## **Testing Methods**

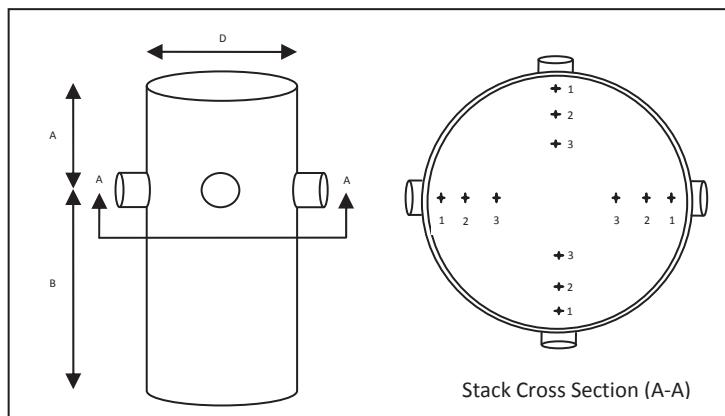
EMCo used the following EPA Reference Methods for the testing program. No deviations from the Reference Methods were noted. All RATAs consisted of at least nine test runs.

Source	Parameter	EPA Reference Method	Test Runs/Duration
Huntington Unit 1	SO <sub>2</sub> (ppmvw)	6C	9 @ 21 minutes

### Testing Location

The Huntington Unit 1 exhaust sampling location consists of a vertical, circular stack with an interior diameter of 323.3 inches and four orthogonal sampling ports located 9.9 diameters downstream and 8.2 diameters upstream of the nearest flow disturbances.

Prior to commencing the RATA, pollutant gas stratification testing was performed across a grid of 12 points determined using EPA Method 1 in accordance with 40 CFR Part 60, Appendix B, PS2 §8.1.3.2 and 40 CFR Part 75, Appendix A, §6.5.6.1. Stratification testing was performed for two minutes per traverse point in accordance with 40 CFR Part 75, Appendix A, §6.5.6.1(c). As diluent ( $\text{CO}_2$ ) and pollutant ( $\text{NO}_x$  or  $\text{SO}_2$ ) concentrations were within 5% of their mean concentrations, subsequent gas RATA testing was performed at a single point in the stack as allowed by 40 CFR Part 75, Appendix A §6.5.6.3(b). See the schematic below.



Stratification Test Diagram	
Unit #	1
Diameter (D)	323.3"
Upstream Distance (A)	>220'
Downstream Distance (B)	>266'
Sample Point Distances from Stack Wall	
Traverse Point 1	14.1"
Traverse Point 2	47.3"
Traverse Point 3	95.7"

### Test Results

The results of the testing program are given in the tables below. Detailed test results are located in Appendix A, along with sample calculations for all computed values.

PacificCorp Huntington Unit 1 RATA Results Summary (6/29/2016) High Load (481 MW)								
Run #	Start Time	Stop Time	SO <sub>2</sub> (lb/mmBtu)			SO <sub>2</sub> (ppmvw)		
			RM	CEM	Difference	RM	CEM	Difference
1	6:00	6:20	0.097	0.091	0.006	33.8	32.4	1.4
2	6:39	6:59	0.097	0.091	0.006	34.6	32.9	1.7
3	7:16	7:36	0.104	0.097	0.007	36.8	35.1	1.7
4	8:10	8:30	0.109	0.103	0.006	38.0	36.6	1.4
5	8:46	9:06	0.095	0.094	0.001	33.2	33.4	-0.2
6	9:24	9:44	0.105	0.105	0.000	37.2	37.9	-0.7
7	10:01	10:21	0.108	0.107	0.001	38.0	38.3	-0.3
8	10:38	10:58	0.103	0.103	0.000	36.0	36.2	-0.2
9	11:14	11:34	0.102	0.099	0.003	35.5	35.0	0.5
<b>Average</b>			<b>0.102</b>	<b>0.099</b>	<b>0.003</b>	<b>35.9</b>	<b>35.3</b>	<b>0.6</b>
<b>Relative Accuracy</b>			5.5%			3.7%		
<b>40 CFR Part 75 Annual Limit</b>			n/a			7.5%		
<b>Bias Adjustment Factor</b>			n/a			1.000		

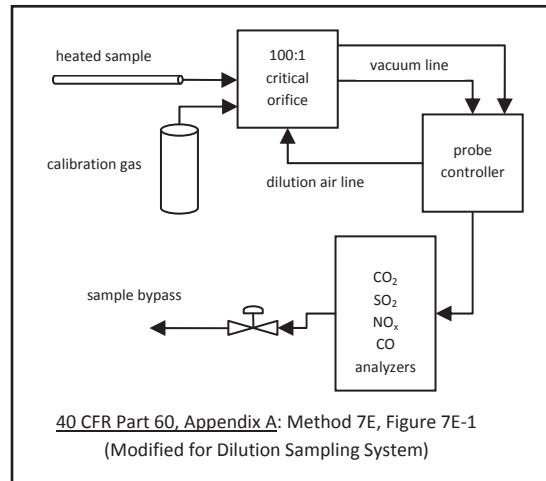
## **Testing Equipment**

All testing equipment was housed in a climate-controlled mobile analytical laboratory custom-designed and built by EMCo. All required quality assurance tests were performed as required by the applicable Reference Methods. Detailed equipment descriptions are given in the table below.

Parameter	Equipment	EPA Reference Methods
Sulfur Dioxide (SO <sub>2</sub> )	Thermo Fisher 43i Pulsed Fluorescence Analyzer	6C

## **Test Details**

Pollutant gas testing was performed using EPA Method 6C. Each test run was 21 minutes in duration. A sample of exhaust gas was withdrawn from the outlet at a constant flow rate using a heated stainless steel probe, transported through a Teflon sample line and a sample dilution system consisting of a heated filter and an M&C Aspirator fitted with a 100:1 critical orifice, and directed to a Thermo Model 43i Pulsed Fluorescence SO<sub>2</sub> Analyzer. (See Figure 7E-1 at right.) Concentrations of SO<sub>2</sub> were reported in units of parts per million on a wet volume basis (ppmvw). Gas concentration data were recorded as ten-second and one-minute averages to an Excel spreadsheet. Prior to sampling, the instruments were calibrated in accordance with EPA Method 7E using EPA Protocol 1 calibration gases. Following each test run, the analyzers were challenged with EPA Protocol 1 calibration gases to determine instrument drift and to correct the raw pollutant data for system bias. Measured SO<sub>2</sub> concentrations were compared with concurrently reported CEMS data to determine the relative accuracy of the CEMS for comparison to the applicable performance specifications from [40 CFR Part 75, Appendix C](#).



### **Appended Information**

Supporting data for this testing program are included as follows.

- Pollutant Stratification Test
- Analyzer Calibration Error Tests
- Data Reduction Spreadsheets
- Analyzer Interference Check
- Sample Calculations
- Field Datasheets
- CEMS Data
- EPA Protocol 1 Gas Certificates
- AETB Certification



**Project PC16-0031**  
**Appendix: Gas Testing**  
Pollutant Stratification Test  
Analyzer Calibration Error Tests  
Data Reduction Spreadsheets  
Analyzer Interference Check  
Sample Calculations  
Field Datasheets  
CEMS Data  
EPA Protocol 1 Gas Certificates

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PacificCorp  
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6/29/2016

EPA Method 1 - 4 Data									
EPA Method 3A, 6C, 7E and 10 Data									
Mass Emission Calculations (Using EPA Method 19)									
F <sub>c</sub>	scf/MMBtu	SO <sub>2</sub> (lb/MMBtu)	NO <sub>x</sub> (lb/MMBtu)	CO (lb/MMBtu)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	Plant CEMS Data	
Run #	1	2	3	4	5	6	7	Unit Load (MW)	
Start Time	6:00	6:39	7:16	8:10	8:46	9:24	10:01	CO <sub>2</sub> (%v/w)	CO <sub>2</sub> (%v/w)
Stop Time	6:20	6:59	7:36	8:30	9:06	9:44	10:21	SO <sub>2</sub> (ppmvw)	SO <sub>2</sub> (ppmvw)
Exhaust Gas Flow Rate (wscf/h)	75,088.838	75,393.588	75,752.970	72,068.206	74,797.694	73,629.595	73,881.791	SO <sub>2</sub> (lb/MMBtu)	NO <sub>x</sub> (lb/MMBtu)
	1	2	3	4	5	6	7	NO <sub>x</sub> (lb/MMBtu)	CO (lb/MMBtu)
CO <sub>2</sub> (%v/w)	10.5	10.7	10.6	10.5	10.5	10.6	10.6	CO (lb/hr)	CO (lb/hr)
SO <sub>2</sub> (ppmvw)	33.8	34.6	36.8	38.0	33.2	37.2	38.0	CO (lb/MMBtu)	CO (lb/MMBtu)
NO <sub>x</sub> (ppmvw)	113.0	113.2	111.0	135.7	130.5	130.0	127.4	NO <sub>x</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)
NO <sub>2</sub> (ppmvw)	0.7	0.8	0.8	8.2	4.4	3.1	2.5	CO (lb/MMBtu)	CO (lb/MMBtu)
CO (ppmvw)	233.4	266.7	282.4	321.8	319.2	252.4	387.8	CO (lb/MMBtu)	CO (lb/MMBtu)
Average	10.5	10.7	10.6	10.5	10.5	10.6	10.6	10.4	10.4
Average	35.8	35.4	36.0	35.5	35.5	36.0	35.5	0.265	0.265
Average	125.2	128.6	132.3	130.1	130.1	130.1	132.3	0.359	0.359
Average	2.6	1.7	1.8	2.1	2.1	2.1	1.8	0.246	0.246
Average	288.5	195.6	311.1	314.9	314.9	311.1	314.9	1048.6	1048.6
Average	10.5	10.5	10.5	10.5	10.5	10.5	10.5	40.9	40.9
Average	35.8	35.4	36.0	35.5	35.5	36.0	35.5	1106.1	1106.1
Average	155.2	155.2	155.2	155.2	155.2	155.2	155.2	1052.2	1052.2
Average	10.5	10.5	10.5	10.5	10.5	10.5	10.5	0.395	0.395

**Pollutant Stratification Test**

**Analyzer Calibration Error Tests**

**Data Reduction Spreadsheets**

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/28/2016**

Initial Linearity (Strat Test)			Strat Test		
Gas	Concentration	Value	Initial Response	Error	Post Test
<b>CO<sub>2</sub></b>	Low	0	0	0.0%	Y
	Mid	8.1	8.1	0.0%	Y
	High	19.2	19.3	0.5%	Y
<b>SO<sub>2</sub></b>	Low	0	0	0.0%	Y
	Mid	62.9	62.6	0.2%	Y
	High	148	148	0.0%	Y
<b>NO<sub>x</sub></b>	Low	0	0	0.0%	Y
	Mid	147	149.6	0.8%	Y
	High	333	334	0.3%	Y

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/28/2016**

**40 CFR Part 75, Appendix A**  
**§6.5.6 Pollutant Stratification Test**

Stack Diameter:	<b>323.3 "</b>			
Stratification Test Point 1:	<b>14.2 "</b>	(4.4%)		
Stratification Test Point 2:	<b>47.2 "</b>	(14.6%)		
Stratification Test Point 3:	<b>95.7 "</b>	(29.6%)		
Port	Point	Time	CO <sub>2</sub>	SO <sub>2</sub>
1	1	9:42	10.6	36.7
1	1	9:43	10.6	36.0
1	2	9:44	10.6	36.0
1	2	9:45	10.6	35.4
1	3	9:46	10.6	35.4
1	3	9:47	10.8	36.5
2	1	9:59	10.8	35.4
2	1	10:00	10.7	34.7
2	2	10:01	10.7	34.5
2	2	10:02	10.7	34.4
2	3	10:03	10.7	34.2
2	3	10:04	10.6	35.4
3	1	10:10	10.8	37.2
3	1	10:11	10.8	37.2
3	2	10:12	10.9	37.6
3	2	10:13	10.9	37.1
3	3	10:14	10.9	37.2
3	3	10:15	10.8	37.5
4	1	10:20	10.5	36.4
4	1	10:21	10.5	35.9
4	2	10:22	10.5	35.9
4	2	10:23	10.7	37.1
4	3	10:24	10.7	37.1
4	3	10:25	10.7	35.6
	Mean	<b>10.7</b>	<b>36.1</b>	
	Max Deviation From Mean	<b>0.2</b>	<b>1.9</b>	
	Max Deviation (%)	<b>2.2%</b>	<b>5.2%</b>	
	Short Line?	OK	OK	
	Single Point?	OK	OK	

Time	CO2	SO2	NOx	CO	Calibration Error Tests
6/28/16 9:08:57	<b>0.0</b>	147.5	-0.1	0.2	
6/28/16 9:09:07	<b>0.0</b>	147.5	-0.1	1.8	
6/28/16 9:09:17	<b>0.0</b>	147.5	-0.3	2.2	
6/28/16 9:09:27	<b>0.0</b>	147.2	-0.1	2.2	
6/28/16 9:09:37	<b>0.0</b>	147.9	0.1	1.3	
6/28/16 9:09:47	0.0	147.3	-0.1	1.1	
6/28/16 9:09:57	0.7	140.7	-0.2	0.9	
6/28/16 9:10:07	2.3	89.6	0.1	1.0	
6/28/16 9:10:17	4.6	49.5	-0.2	1.4	
6/28/16 9:10:27	7.6	29.5	0.0	0.1	
6/28/16 9:10:37	11.3	18.1	0.1	-1.9	
6/28/16 9:10:47	16.0	11.6	-0.2	-3.1	
6/28/16 9:10:57	18.8	7.7	0.0	-3.2	
6/28/16 9:11:07	19.2	5.2	-0.2	-1.7	
6/28/16 9:11:17	19.3	3.4	-0.2	-0.9	
6/28/16 9:11:27	19.3	2.3	0.0	-1.8	
6/28/16 9:11:37	19.3	2.1	-0.2	-3.1	
6/28/16 9:11:47	19.3	1.5	-0.2	-4.6	
6/28/16 9:11:57	19.2	1.1	-0.1	-4.8	
6/28/16 9:12:07	19.2	0.8	0.1	-3.6	
6/28/16 9:12:17	19.3	0.6	0.2	-4.0	
6/28/16 9:12:27	<b>19.3</b>	0.9	0.0	-4.1	
6/28/16 9:12:37	<b>19.3</b>	0.8	0.1	-4.1	
6/28/16 9:12:47	<b>19.3</b>	0.6	0.0	-3.9	
6/28/16 9:12:57	<b>19.3</b>	0.5	0.0	-4.0	
6/28/16 9:13:07	<b>19.3</b>	0.7	0.0	-4.8	
6/28/16 9:13:17	<b>19.3</b>	0.7	-0.2	-4.5	
6/28/16 9:13:27	19.3	0.5	0.1	-4.8	
6/28/16 9:13:37	19.3	0.4	-0.1	-3.6	
6/28/16 9:13:47	19.3	0.5	0.1	-3.9	
6/28/16 9:13:57	18.2	0.3	0.2	-3.3	
6/28/16 9:14:07	16.3	0.5	0.2	-3.1	
6/28/16 9:14:17	14.2	0.2	0.0	-2.1	
6/28/16 9:14:27	12.4	0.5	0.0	-0.4	
6/28/16 9:14:37	10.7	0.3	0.3	-2.0	
6/28/16 9:14:47	9.1	0.4	-0.2	-2.0	
6/28/16 9:14:57	8.2	0.2	0.2	-2.7	
6/28/16 9:15:07	8.1	0.5	0.3	-2.5	
6/28/16 9:15:17	8.1	0.1	-0.1	-1.0	
6/28/16 9:15:27	8.1	-0.1	-0.1	-1.8	
6/28/16 9:15:37	8.1	-0.2	0.1	-0.7	
6/28/16 9:15:47	<b>8.1</b>	<b>0.1</b>	<b>0.0</b>	1.6	
6/28/16 9:15:57	<b>8.1</b>	<b>0.0</b>	<b>0.0</b>	1.9	
6/28/16 9:16:07	<b>8.1</b>	<b>-0.1</b>	<b>0.1</b>	0.9	
6/28/16 9:16:17	<b>8.1</b>	<b>-0.1</b>	<b>0.1</b>	-0.5	
6/28/16 9:16:27	<b>8.1</b>	<b>-0.2</b>	<b>-0.1</b>	-1.2	
6/28/16 9:16:37	8.1	-0.4	0.1	-2.1	
6/28/16 9:16:47	8.1	-0.3	0.1	-1.6	
6/28/16 9:16:57	8.1	-0.2	-0.1	-0.4	
6/28/16 9:17:07	8.0	-0.2	0.1	0.3	
6/28/16 9:17:17	8.0	-0.4	0.9	0.4	
6/28/16 9:17:27	6.8	-0.2	1.6	0.1	
6/28/16 9:17:37	5.1	0.4	140.7	-0.6	
6/28/16 9:17:47	3.6	1.3	314.3	-1.7	
6/28/16 9:17:57	2.4	1.4	349.4	-1.3	
6/28/16 9:18:07	1.3	1.6	349.7	0.9	
6/28/16 9:18:17	0.4	1.3	349.6	2.8	
6/28/16 9:18:27	0.1	1.9	349.6	3.3	
6/28/16 9:18:37	0.0	1.6	349.9	3.0	
6/28/16 9:18:47	0.1	1.8	333.5	3.5	
6/28/16 9:18:57	0.0	1.5	332.9	4.2	
6/28/16 9:19:07	0.0	1.5	334.7	3.7	
6/28/16 9:19:17	0.0	1.6	334.3	2.6	
6/28/16 9:19:27	0.0	1.5	<b>334.2</b>	2.3	
6/28/16 9:19:37	0.0	1.8	<b>334.2</b>	3.4	
6/28/16 9:19:47	0.0	1.6	<b>334.2</b>	3.4	
6/28/16 9:19:57	0.0	1.5	<b>334.2</b>	2.0	
6/28/16 9:20:07	0.0	1.7	334.5	0.7	
6/28/16 9:20:17	0.0	1.5	334.4	1.8	
6/28/16 9:20:27	0.1	4.2	334.3	2.1	
6/28/16 9:20:37	0.1	32.0	202.1	3.6	
6/28/16 9:20:47	0.1	85.9	37.1	3.0	

Time	CO2	SO2	NOx	CO
6/28/16 9:20:57	0.1	112.1	3.2	2.4
6/28/16 9:21:07	0.1	126.1	1.5	1.9
6/28/16 9:21:17	0.1	133.3	0.9	1.8
6/28/16 9:21:27	0.0	138.4	0.9	1.5
6/28/16 9:21:37	0.0	141.0	0.7	2.6
6/28/16 9:21:47	0.0	143.5	0.8	3.5
6/28/16 9:21:57	0.0	144.9	0.5	4.3
6/28/16 9:22:07	0.0	144.9	0.7	2.8
6/28/16 9:22:17	0.0	146.0	0.6	2.1
6/28/16 9:22:27	0.0	145.9	0.5	2.2
6/28/16 9:22:37	0.0	146.1	0.3	2.3
6/28/16 9:22:47	0.0	147.1	0.2	2.7
6/28/16 9:22:57	0.0	145.9	0.3	2.1
6/28/16 9:23:07	0.0	147.5	0.3	1.9
6/28/16 9:23:17	0.0	146.7	0.3	2.1
6/28/16 9:23:27	0.0	147.1	0.4	2.6
6/28/16 9:23:37	0.0	148.0	0.2	2.0
6/28/16 9:23:47	0.0	148.5	0.5	0.7
6/28/16 9:23:57	0.0	147.9	0.5	0.8
6/28/16 9:24:07	0.0	147.9	0.2	1.0
6/28/16 9:24:17	0.0	148.1	0.3	2.0
6/28/16 9:24:27	0.0	149.3	0.4	2.2
6/28/16 9:24:37	0.0	148.9	0.2	2.5
6/28/16 9:24:47	0.0	147.0	0.3	1.9
6/28/16 9:24:57	0.0	140.3	51.2	2.0
6/28/16 9:25:07	0.0	88.6	115.5	1.4
6/28/16 9:25:17	0.0	47.1	137.0	2.6
6/28/16 9:25:27	0.0	27.7	147.4	3.1
6/28/16 9:25:37	0.0	17.4	149.5	3.6
6/28/16 9:25:47	0.0	11.4	149.6	2.7
6/28/16 9:25:57	0.0	7.5	149.5	0.9
6/28/16 9:26:07	0.0	5.0	149.5	2.0
6/28/16 9:26:17	0.0	3.8	149.7	4.3
6/28/16 9:26:27	0.0	2.9	149.6	5.3
6/28/16 9:26:37	0.0	2.3	149.6	4.0
6/28/16 9:26:47	0.0	2.0	150.0	2.1
6/28/16 9:26:57	0.0	1.7	149.9	1.3
6/28/16 9:27:07	0.0	1.4	149.6	1.0
6/28/16 9:27:17	0.0	4.5	108.8	1.6
6/28/16 9:27:27	0.0	27.9	57.9	2.8
6/28/16 9:27:37	0.0	44.1	28.9	3.6
6/28/16 9:27:47	0.0	51.2	5.7	3.3
6/28/16 9:27:57	0.0	56.6	0.7	2.4
6/28/16 9:28:07	0.0	58.9	0.4	2.2
6/28/16 9:28:17	0.0	59.6	0.4	3.4
6/28/16 9:28:27	0.0	61.4	0.2	2.4
6/28/16 9:28:37	0.0	61.7	0.5	2.9
6/28/16 9:28:47	0.0	62.1	0.3	2.4
6/28/16 9:28:57	0.0	62.1	0.4	2.6
6/28/16 9:29:07	0.0	62.9	0.3	1.9
6/28/16 9:29:17	0.0	62.8	0.3	2.3
6/28/16 9:29:27	0.0	62.6	0.3	3.5
6/28/16 9:29:37	0.0	62.5	0.2	2.7
6/28/16 9:29:47	0.0	62.7	0.4	2.5
6/28/16 9:29:57	0.0	63.2	0.3	2.8
6/28/16 9:30:07	0.0	62.9	0.0	2.8
6/28/16 9:30:17	0.0	63.8	0.0	1.9
6/28/16 9:30:27	0.0	63.0	0.2	0.9
6/28/16 9:30:37	0.0	63.0	-0.1	1.9
6/28/16 9:30:47	0.0	62.4	0.1	2.1
6/28/16 9:30:57	0.0	63.4	0.2	2.2
6/28/16 9:31:07	0.0	63.5	0.0	1.4
6/28/16 9:31:17	0.0	63.3	-0.1	0.7
6/28/16 9:31:27	0.2	61.8	0.0	0.2
6/28/16 9:31:37	1.4	49.1	0.1	0.6
6/28/16 9:31:47	3.4	26.1	0.3	0.1
6/28/16 9:31:57	6.0	14.8	0.0	-0.6
6/28/16 9:32:07	9.4	8.8	-0.1	-1.0
6/28/16 9:32:17	13.6	5.4	0.2	-1.3
6/28/16 9:32:27	18.1	3.6	0.0	-2.2
6/28/16 9:32:37	19.1	2.2	0.0	-2.6
6/28/16 9:32:47	19.2	1.1	-0.1	-4.0

Time	CO2	SO2	NOx	CO
6/28/16 9:32:57	19.2	0.9	0.1	-4.5
6/28/16 9:33:07	19.2	0.4	0.1	-3.1
6/28/16 9:33:17	19.2	0.4	0.0	-1.1
6/28/16 9:33:27	19.2	0.2	-0.1	-1.1
6/28/16 9:33:37	19.2	0.1	0.1	-2.5
6/28/16 9:33:47	19.2	0.1	-0.2	-3.9
6/28/16 9:33:57	19.2	0.3	0.0	-3.4
6/28/16 9:34:07	18.4	0.1	-0.2	-1.6
6/28/16 9:34:17	14.4	0.3	0.0	22.0
6/28/16 9:34:27	10.2	0.2	0.2	77.0
6/28/16 9:34:37	6.7	-0.2	0.0	161.9
6/28/16 9:34:47	4.0	0.0	0.1	243.0
6/28/16 9:34:57	1.9	0.1	-0.1	296.1
6/28/16 9:35:07	0.5	-0.2	-0.2	319.3
6/28/16 9:35:17	0.2	-0.1	-0.2	323.8
6/28/16 9:35:27	0.1	-0.2	-0.2	323.0
6/28/16 9:35:37	0.1	-0.1	-0.1	323.9
6/28/16 9:35:47	0.1	0.0	0.2	325.6
6/28/16 9:35:57	0.1	-0.1	0.0	327.0
6/28/16 9:36:07	0.1	-0.1	0.1	325.6
6/28/16 9:36:17	0.0	-0.1	0.0	324.4
6/28/16 9:36:27	0.0	-0.2	0.0	323.9
6/28/16 9:36:37	0.0	-0.4	-0.1	324.7
6/28/16 9:36:47	0.0	-0.2	0.0	<b>326.8</b>
6/28/16 9:36:57	0.0	-0.1	0.2	<b>327.9</b>
6/28/16 9:37:07	0.0	-0.2	0.1	328.0
6/28/16 9:37:17	0.0	-0.2	0.2	324.0
6/28/16 9:37:27	0.0	-0.2	0.1	304.3
6/28/16 9:37:37	0.0	-0.2	0.0	266.3
6/28/16 9:37:47	0.0	-0.1	0.0	216.9
6/28/16 9:37:57	0.0	0.0	0.1	178.6
6/28/16 9:38:07	0.0	-0.2	0.2	157.3
6/28/16 9:38:17	0.0	-0.2	0.1	151.1
6/28/16 9:38:27	0.0	-0.2	0.0	149.1
6/28/16 9:38:37	0.0	-0.4	0.1	148.3
6/28/16 9:38:47	0.0	-0.4	0.3	147.9
6/28/16 9:38:57	0.0	-0.5	0.0	<b>147.6</b>
6/28/16 9:39:07	0.0	-0.2	0.1	<b>148.7</b>
6/28/16 9:39:17	0.0	-0.2	0.0	<b>149.3</b>

Time	CO2	SO2	NOx	CO	
6/28/16 10:43:37	0.0	62.8	-0.1	-1.0	Strat Test
6/28/16 10:43:47	0.0	62.0	0.2	-1.7	PostCal
6/28/16 10:43:57	0.0	62.5	0.2	-2.6	
6/28/16 10:44:07	0.0	63.3	0.0	-3.7	
6/28/16 10:44:17	0.8	66.7	44.3	17.6	
6/28/16 10:44:27	1.9	64.6	99.8	93.4	
6/28/16 10:44:37	3.4	54.2	115.1	221.0	
6/28/16 10:44:47	5.2	49.6	120.2	359.9	
6/28/16 10:44:57	7.3	46.3	121.2	452.3	
6/28/16 10:45:07	9.7	44.1	121.0	492.6	
6/28/16 10:45:17	10.6	43.5	120.9	496.0	
6/28/16 10:45:27	10.7	42.6	121.1	489.2	
6/28/16 10:45:37	10.8	42.0	121.0	485.3	
6/28/16 10:45:47	10.8	42.3	120.9	501.7	
6/28/16 10:45:57	10.8	42.0	120.6	548.9	
6/28/16 10:46:07	10.8	42.8	120.1	622.7	
6/28/16 10:46:17	10.8	42.7	120.1	691.7	
6/28/16 10:46:27	10.9	42.3	120.7	722.9	
6/28/16 10:46:37	10.9	42.0	120.8	716.7	
6/28/16 10:46:47	10.8	42.1	121.0	695.9	
6/28/16 10:46:57	10.8	41.0	121.2	681.3	
6/28/16 10:47:07	10.8	40.7	121.6	669.4	
6/28/16 10:47:17	10.7	41.1	122.0	652.8	
6/28/16 10:47:27	10.7	40.8	122.9	620.4	
6/28/16 10:47:37	10.7	40.7	123.0	576.8	
6/28/16 10:47:47	10.7	40.4	122.7	529.8	
6/28/16 10:47:57	10.7	39.7	122.5	490.5	
6/28/16 10:48:07	10.7	40.3	122.7	454.3	
6/28/16 10:48:17	10.7	40.3	122.4	421.1	
6/28/16 10:48:27	10.7	38.8	122.6	396.8	
6/28/16 10:48:37	10.7	40.2	121.5	391.3	
6/28/16 10:48:47	10.7	40.0	121.3	406.2	
6/28/16 10:48:57	10.7	40.1	121.0	434.3	
6/28/16 10:49:07	10.8	40.9	120.9	467.3	
6/28/16 10:49:17	10.8	41.0	120.8	498.3	
6/28/16 10:49:27	10.8	41.0	120.6	523.3	
6/28/16 10:49:37	10.8	41.0	120.9	534.0	
6/28/16 10:49:47	10.8	41.0	120.4	527.3	
6/28/16 10:49:57	10.8	41.1	120.5	516.6	
6/28/16 10:50:07	10.8	40.8	120.2	519.5	
6/28/16 10:50:17	10.8	41.1	120.4	540.2	
6/28/16 10:50:27	10.8	41.2	121.2	565.5	
6/28/16 10:50:37	10.8	41.3	121.2	588.3	
6/28/16 10:50:47	10.8	41.7	121.0	605.0	
6/28/16 10:50:57	10.8	42.0	121.3	615.9	
6/28/16 10:51:07	10.8	42.1	121.4	622.7	
6/28/16 10:51:17	10.8	42.3	121.5	631.4	
6/28/16 10:51:27	10.9	43.1	122.0	645.2	
6/28/16 10:51:37	10.9	43.2	122.1	670.4	
6/28/16 10:51:47	10.9	43.6	122.1	704.6	
6/28/16 10:51:57	10.9	44.1	121.8	739.2	
6/28/16 10:52:07	10.9	43.9	121.7	755.5	
6/28/16 10:52:17	10.9	43.8	121.3	750.1	
6/28/16 10:52:27	10.9	44.4	121.4	731.7	
6/28/16 10:52:37	10.9	44.4	121.8	712.9	
6/28/16 10:52:47	10.9	44.1	122.2	690.6	
6/28/16 10:52:57	10.9	43.5	121.9	663.8	
6/28/16 10:53:07	10.8	42.8	122.1	624.0	
6/28/16 10:53:17	10.8	42.8	122.4	577.0	
6/28/16 10:53:27	10.8	43.2	122.2	530.1	
6/28/16 10:53:37	10.8	43.0	122.5	496.6	
6/28/16 10:53:47	10.8	42.8	122.4	482.2	
6/28/16 10:53:57	9.1	43.4	99.7	469.3	
6/28/16 10:54:07	6.9	33.5	70.7	412.8	
6/28/16 10:54:17	4.8	17.6	98.3	303.8	
6/28/16 10:54:27	3.1	10.4	140.6	172.6	
6/28/16 10:54:37	1.7	6.7	149.3	73.9	
6/28/16 10:54:47	0.5	4.4	149.5	22.2	
6/28/16 10:54:57	0.1	3.0	149.7	5.1	
6/28/16 10:55:07	0.1	2.2	149.5	1.9	
6/28/16 10:55:17	0.1	1.7	149.4	0.0	
6/28/16 10:55:27	0.1	1.2	149.9	0.2	

Time	CO2	SO2	NOx	CO
6/28/16 10:55:37	0.1	0.7	<b>149.9</b>	0.0
6/28/16 10:55:47	0.0	1.1	<b>149.9</b>	-0.1
6/28/16 10:55:57	0.0	1.0	<b>150.0</b>	-0.3
6/28/16 10:56:07	0.0	0.9	149.9	-1.5
6/28/16 10:56:17	0.0	0.7	150.1	-0.7
6/28/16 10:56:27	0.0	0.6	149.8	-1.1
6/28/16 10:56:37	0.0	0.6	<b>149.8</b>	0.1
6/28/16 10:56:47	0.0	0.5	150.1	-0.6
6/28/16 10:56:57	0.0	0.4	149.8	-0.5
6/28/16 10:57:07	0.0	0.7	149.9	-1.1
6/28/16 10:57:17	0.0	0.5	<b>149.8</b>	-0.8
6/28/16 10:57:27	0.6	0.4	149.5	-0.7
6/28/16 10:57:37	1.5	0.1	90.0	-2.4
6/28/16 10:57:47	2.6	-0.1	16.0	-3.4
6/28/16 10:57:57	3.9	-0.3	1.0	-4.5
6/28/16 10:58:07	5.5	-0.3	0.7	-4.2
6/28/16 10:58:17	7.3	-0.5	0.6	-2.4
6/28/16 10:58:27	7.9	-0.2	0.4	-3.3
6/28/16 10:58:37	8.0	-0.6	0.3	-3.4
6/28/16 10:58:47	8.0	-0.3	0.2	-4.6
6/28/16 10:58:57	8.0	-0.6	0.5	-4.4
6/28/16 10:59:07	<b>8.0</b>	<b>-0.5</b>	<b>0.3</b>	-5.3
6/28/16 10:59:17	<b>8.0</b>	<b>-0.5</b>	<b>0.2</b>	-5.0
6/28/16 10:59:27	<b>8.0</b>	<b>-0.4</b>	<b>0.3</b>	-4.3
6/28/16 10:59:37	<b>8.0</b>	<b>-0.3</b>	<b>0.2</b>	-3.8

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**

		Calibration Error Tests		
Gas	Level	Gas Value	Analyzer Response	Calibration Error
<b>CO<sub>2</sub></b>	Low	0	0	0.0%
	Mid	8.1	8	0.5%
	High	19.2	19.2	0.0%
<b>SO<sub>2</sub></b>	Low	0	-0.1	0.1%
	Mid	62.9	63	0.1%
	High	148	147.5	0.3%
<b>NO<sub>x</sub></b>	Low	0	0.1	0.0%
	Mid	147	146.5	0.2%
	High	333	334.2	0.4%
<b>CO</b>	Low	0	-0.2	0.1%
	Mid	146	150.5	1.4%
	High	327	327.4	0.1%

<2%

Post-Run System Bias Checks and Drift Assessments

Gas	Level	Run 1						Run 2						Run 3						Run 4						Run 5					
		Start Time			Run Length			Start Time			Run Length			Start Time			Run Length			Start Time			Run Length			Start Time			Run Length		
		Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time	Start Time	Run Length	Stop Time			
CO <sub>2</sub>	Low	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
	Span	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
SO <sub>2</sub>	Low	-0.2	0.1%	0.1%	0.0%	0.0%	0.0%	-0.1	0.0%	0.1%	0.0%	0.0%	0.0%	-0.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Span	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
NO <sub>x</sub>	Low	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Span	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CO	Low	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Span	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	

Post-Run System Bias Checks and Drift Assessm

Gas	level	Run 6						Run 7						Run 8						Run 9						
		Start Time Run Length Stop Time			Start Time Run Length Stop Time			Start Time Run Length Stop Time			Start Time Run Length Stop Time			Start Time Run Length Stop Time			Start Time Run Length Stop Time			Start Time Run Length Stop Time			Start Time Run Length Stop Time			
		Initial Bias	Post Cal Bias	Cal Drift																						
CO <sub>2</sub>	Low	0.0%	0.1	0.5%	0.0%	0.1	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.0%	0.5%	0.5%
	Span	0.0%	19.3	0.5%	0.0%	0.0%	19.2	0.0%	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	-0.1	0.0%	0.1%	-0.5%	19.1	0.0%	0.0%	19.4	0.0%	1.6%
SO <sub>2</sub>	Low	0.0%	0	0.1%	0.1%	0.0%	-0.2	-0.1%	0.1%	0.0%	-0.1	0.0%	0.1%	0.0%	0.0%	0.0%	-0.2	-0.1%	0.1%	-0.1%	0.1%	0.0%	0	0.1%	0.1%	0.1%
	Span	0.0%	62.6	-0.3%	0.3%	0.0%	63.3	0.2%	0.5%	0.0%	63.2	0.1%	0.1%	0.0%	0.0%	0.0%	62.5	-0.3%	0.5%	0.5%	0.5%	0.0%	63	0.0%	0.0%	0.3%
NO <sub>x</sub>	Low	0.0%	0.4	0.1%	0.1%	0.0%	0.2	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.0%	0.0%	0.0%
	Span	0.0%	147.2	0.2%	0.2%	0.0%	147.3	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	147.1	0.2%	0.1%	0.2%	147.3	0.2%	0.0%	147.3	0.2%	0.0%
CO	Low	0.0%	-1.1	-0.3%	-0.3%	-1.1%	-0.3%	-1.4	-0.4%	-0.4%	-1.4	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	1.4	0.5%	0.5%	0.4%	1	0.1%	0.1%	0.3%	0.3%	0.0%
	Span	0.0%	327.5	0.0%	1.3%	0.0%	327.7	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	330.1	0.8%	0.7%	0.8%	328.1	0.2%	0.6%	0.9	0.2%	-0.2%
HS	Low	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Span	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	or ± 0.5	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #1**

Start Time 6:00  
Run Length 21  
Stop Time 6:20

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	6:00	10.4	32.8	109.6	261.7	0.6
2	6:01	10.4	32.8	109.9	264.8	0.7
3	6:02	10.4	32.6	110.0	257.3	0.5
4	6:03	10.4	33.1	110.7	233.1	0.7
5	6:04	10.4	33.4	110.9	201.4	0.7
6	6:05	10.4	33.5	110.7	227.9	0.8
7	6:06	10.4	32.9	111.0	212.2	0.6
8	6:07	10.4	32.3	111.5	190.6	0.6
9	6:08	10.3	32.0	110.8	186.2	0.9
10	6:09	10.4	31.8	110.9	183.3	0.7
11	6:10	10.6	33.3	109.6	208.5	0.6
12	6:11	10.6	33.0	111.2	210.2	1.0
13	6:12	10.6	33.0	111.5	230.8	0.8
14	6:13	10.6	33.5	112.3	216.5	1.0
15	6:14	10.5	33.2	113.1	191.4	0.9
16	6:15	10.5	33.8	114.3	218.6	0.7
17	6:16	10.5	34.8	116.4	263.3	0.8
18	6:17	10.5	35.4	117.3	292.4	0.6
19	6:18	10.5	36.4	117.7	275.9	0.8
20	6:19	10.5	36.7	117.5	286.3	0.9
21	6:20	10.5	37.2	117.1	314.7	0.9
<b>Average</b>		<b>10.5</b>	<b>33.7</b>	<b>112.6</b>	<b>234.6</b>	<b>0.7</b>
C <sub>o</sub> pre		0.0	-0.1	0.1	-0.2	
C <sub>o</sub> post		0.0	-0.2	0.0	0.7	
<b>C<sub>o</sub></b>		<b>0.0</b>	<b>-0.2</b>	<b>0.1</b>	<b>0.3</b>	
C <sub>m</sub> pre		19.2	63.0	146.5	327.4	
C <sub>m</sub> post		19.2	62.7	146.4	329.7	
<b>C<sub>m</sub></b>		<b>19.2</b>	<b>62.9</b>	<b>146.5</b>	<b>328.6</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.5</b>	<b>33.8</b>	<b>113.0</b>	<b>233.4</b>	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #2**

Start Time 6:39  
Run Length 21  
Stop Time 6:59

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	6:39	10.6	34.7	114.8	223.7	0.8
2	6:40	10.6	35.3	114.7	213.6	0.9
3	6:41	10.7	34.7	113.8	204.1	0.8
4	6:42	10.7	34.8	113.8	229.8	0.6
5	6:43	10.7	34.4	113.6	222.6	0.4
6	6:44	10.7	35.2	111.7	266.0	0.6
7	6:45	10.7	35.0	112.2	305.7	0.6
8	6:46	10.7	35.2	112.5	322.8	0.8
9	6:47	10.7	34.5	113.0	263.8	0.7
10	6:48	10.6	33.8	113.5	231.2	1.1
11	6:49	10.6	34.0	113.4	243.0	0.8
12	6:50	10.7	33.9	113.5	247.8	0.7
13	6:51	10.6	33.9	113.3	275.2	0.8
14	6:52	10.7	34.2	112.7	324.6	0.8
15	6:53	10.7	34.2	112.5	271.9	0.8
16	6:54	10.7	34.0	112.5	286.3	0.9
17	6:55	10.7	34.2	111.2	287.9	0.9
18	6:56	10.8	34.2	111.0	286.7	0.9
19	6:57	10.7	34.1	111.3	277.4	0.7
20	6:58	10.8	34.0	111.9	345.7	0.7
21	6:59	10.7	33.1	111.9	292.4	1.0
<b>Average</b>		<b>10.7</b>	<b>34.3</b>	<b>112.8</b>	<b>267.7</b>	<b>0.8</b>
C <sub>o</sub> pre		0.0	-0.2	0.0	0.7	
C <sub>o</sub> post		0.0	-0.1	-0.1	2.3	
<b>C<sub>o</sub></b>		<b>0.0</b>	<b>-0.2</b>	<b>-0.1</b>	<b>1.5</b>	
C <sub>m</sub> pre		19.2	62.7	146.4	329.7	
C <sub>m</sub> post		19.2	62.4	146.6	326.2	
<b>C<sub>m</sub></b>		<b>19.2</b>	<b>62.6</b>	<b>146.5</b>	<b>328.0</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.7</b>	<b>34.6</b>	<b>113.2</b>	<b>266.7</b>	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #3**

Start Time      7:16  
Run Length      21  
Stop Time      7:36

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	7:16	10.5	35.0	110.4	282.4	0.7
2	7:17	10.5	34.4	111.2	268.9	0.8
3	7:18	10.5	34.8	111.3	291.9	0.6
4	7:19	10.6	35.9	111.0	299.7	0.8
5	7:20	10.6	36.3	111.0	314.0	0.9
6	7:21	10.7	36.5	111.3	331.8	0.5
7	7:22	10.6	36.0	112.4	299.6	0.6
8	7:23	10.6	36.4	109.1	342.4	1.0
9	7:24	10.5	35.7	110.3	307.2	1.0
10	7:25	10.5	34.9	110.1	272.4	0.9
11	7:26	10.6	35.7	108.9	319.4	0.9
12	7:27	10.6	35.9	109.8	269.3	1.1
13	7:28	10.5	35.7	110.3	230.6	0.9
14	7:29	10.6	36.2	111.1	182.5	0.6
15	7:30	10.5	36.6	111.0	205.8	0.6
16	7:31	10.5	37.2	111.0	207.8	1.0
17	7:32	10.6	38.6	110.8	291.5	0.8
18	7:33	10.7	39.9	109.9	379.5	0.8
19	7:34	10.7	39.5	110.2	350.2	0.9
20	7:35	10.6	38.5	110.9	239.6	0.8
21	7:36	10.6	38.1	110.9	244.4	0.8
<b>Average</b>		<b>10.6</b>	<b>36.6</b>	<b>110.6</b>	<b>282.4</b>	<b>0.8</b>
C <sub>o</sub> pre		0.0	-0.1	-0.1	2.3	
C <sub>o</sub> post		0.0	-0.3	0.0	2.9	
<b>C<sub>o</sub></b>		<b>0.0</b>	<b>-0.2</b>	<b>-0.1</b>	<b>2.6</b>	
C <sub>m</sub> pre		19.2	62.4	146.6	326.2	
C <sub>m</sub> post		19.1	62.7	146.5	327.0	
<b>C<sub>m</sub></b>		<b>19.2</b>	<b>62.6</b>	<b>146.6</b>	<b>326.6</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.6</b>	<b>36.8</b>	<b>111.0</b>	<b>282.4</b>	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #4**

Start Time      8:10  
Run Length      21  
Stop Time      8:30

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	8:10	10.5	37.4	139.0	215.0	7.9
2	8:11	10.5	37.6	139.7	281.1	10.0
3	8:12	10.5	37.4	139.9	278.8	10.4
4	8:13	10.4	37.6	139.8	258.5	10.4
5	8:14	10.5	38.3	140.0	268.7	10.3
6	8:15	10.5	38.5	137.7	311.0	10.1
7	8:16	10.5	39.0	136.7	374.7	9.6
8	8:17	10.5	39.2	136.8	353.7	9.3
9	8:18	10.6	40.0	134.6	405.2	8.7
10	8:19	10.5	40.0	135.6	406.3	8.5
11	8:20	10.5	40.0	135.3	354.5	8.1
12	8:21	10.5	40.2	133.4	374.0	7.8
13	8:22	10.5	39.7	133.3	409.6	7.6
14	8:23	10.4	38.3	133.6	335.5	7.4
15	8:24	10.4	37.1	133.7	294.8	7.2
16	8:25	10.3	36.0	134.0	274.5	7.1
17	8:26	10.4	35.9	132.9	298.5	7.0
18	8:27	10.4	35.6	132.9	355.7	6.9
19	8:28	10.4	35.2	132.0	324.5	6.5
20	8:29	10.4	34.6	132.0	333.0	6.2
21	8:30	10.3	34.8	132.2	288.8	6.2
<b>Average</b>		<b>10.4</b>	<b>37.7</b>	<b>135.5</b>	<b>323.6</b>	<b>8.2</b>
C <sub>o</sub> pre		0.0	-0.3	0.0	2.9	
C <sub>o</sub> post		0.0	0.0	0.7	1.7	
<b>C<sub>o</sub></b>		<b>0.0</b>	<b>-0.2</b>	<b>0.4</b>	<b>2.3</b>	
C <sub>m</sub> pre		19.1	62.7	146.5	327.0	
C <sub>m</sub> post		19.2	62.5	146.9	330.7	
<b>C<sub>m</sub></b>		<b>19.2</b>	<b>62.6</b>	<b>146.7</b>	<b>328.9</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.5</b>	<b>38.0</b>	<b>135.7</b>	<b>321.8</b>	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #5**

Start Time      8:46  
 Run Length      21  
 Stop Time      9:06

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	8:46	10.5	34.6	131.0	256.4	4.2
2	8:47	10.4	33.5	131.1	231.7	4.7
3	8:48	10.5	34.2	130.6	275.7	5.0
4	8:49	10.5	33.5	132.3	277.3	5.1
5	8:50	10.5	33.9	131.4	382.3	5.1
6	8:51	10.6	33.9	131.5	279.0	4.7
7	8:52	10.6	34.4	130.7	341.0	4.6
8	8:53	10.7	35.7	129.3	328.1	4.5
9	8:54	10.7	36.2	128.8	408.8	4.5
10	8:55	10.6	35.7	130.8	385.4	4.4
11	8:56	10.4	33.9	133.0	280.0	4.6
12	8:57	10.4	32.1	131.0	225.9	4.3
13	8:58	10.4	31.8	130.0	281.8	4.3
14	8:59	10.5	31.1	130.8	261.9	4.0
15	9:00	10.5	31.4	129.7	293.1	4.2
16	9:01	10.7	32.1	128.1	376.8	4.3
17	9:02	10.7	32.0	128.5	438.4	4.0
18	9:03	10.6	31.4	130.0	358.4	3.9
19	9:04	10.6	31.4	130.3	374.3	3.8
20	9:05	10.5	30.6	129.8	357.7	3.8
21	9:06	10.6	30.6	128.9	376.4	3.8
<b>Average</b>		<b>10.5</b>	<b>33.0</b>	<b>130.4</b>	<b>323.3</b>	<b>4.4</b>
C <sub>o</sub> pre		0.0	0.0	0.7	1.7	
C <sub>o</sub> post		0.1	-0.2	0.0	2.4	
<b>C<sub>o</sub></b>		<b>0.1</b>	<b>-0.1</b>	<b>0.4</b>	<b>2.1</b>	
C <sub>m</sub> pre		19.2	62.5	146.9	330.7	
C <sub>m</sub> post		19.3	63.0	146.7	331.6	
<b>C<sub>m</sub></b>		<b>19.3</b>	<b>62.8</b>	<b>146.8</b>	<b>331.2</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
<b>Corrected Average:</b>		<b>10.5</b>	<b>33.2</b>	<b>130.5</b>	<b>319.2</b>	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #6**

Start Time      9:24  
 Run Length      21  
 Stop Time      9:44

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	9:24	10.6	36.9	132.0	328.2	2.7
2	9:25	10.6	36.7	130.7	314.0	3.2
3	9:26	10.7	36.5	131.8	199.6	3.1
4	9:27	10.6	35.8	131.1	155.2	3.2
5	9:28	10.7	36.2	127.9	182.4	3.4
6	9:29	10.7	36.2	127.8	163.3	3.4
7	9:30	10.7	36.1	127.0	163.4	3.3
8	9:31	10.7	36.6	128.3	285.2	3.1
9	9:32	10.6	36.7	129.4	321.9	3.4
10	9:33	10.7	38.2	129.3	264.1	3.4
11	9:34	10.7	38.4	129.5	235.6	3.1
12	9:35	10.8	40.5	130.0	254.5	3.2
13	9:36	10.8	39.5	131.2	300.7	3.2
14	9:37	10.8	39.1	130.4	261.8	3.1
15	9:38	10.8	39.2	129.7	316.7	2.8
16	9:39	10.6	37.1	131.5	290.2	3.1
17	9:40	10.7	36.7	131.1	242.4	3.1
18	9:41	10.7	35.8	131.0	224.4	3.0
19	9:42	10.7	35.7	129.8	227.9	3.0
20	9:43	10.8	35.5	129.7	269.7	3.2
21	9:44	10.8	35.2	129.6	344.2	3.1
<b>Average</b>		<b>10.7</b>	<b>37.1</b>	<b>129.9</b>	<b>254.5</b>	<b>3.1</b>
C <sub>o</sub> pre		0.1	-0.2	0.0	2.4	
C <sub>o</sub> post		0.1	0.0	0.4	-1.1	
<b>C<sub>o</sub></b>		<b>0.1</b>	<b>-0.1</b>	<b>0.2</b>	<b>0.7</b>	
C <sub>m</sub> pre		19.3	63.0	146.7	331.6	
C <sub>m</sub> post		19.3	62.6	147.2	327.5	
<b>C<sub>m</sub></b>		<b>19.3</b>	<b>62.8</b>	<b>147.0</b>	<b>329.6</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
<b>Corrected Average:</b>		<b>10.6</b>	<b>37.2</b>	<b>130.0</b>	<b>252.4</b>	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #7**

Start Time      10:01  
Run Length      21  
Stop Time      10:21

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	10:01	10.7	44.0	129.3	396.4	2.2
2	10:02	10.6	41.7	129.3	361.3	2.3
3	10:03	10.6	40.8	128.0	338.8	2.4
4	10:04	10.5	38.9	128.8	263.2	2.2
5	10:05	10.5	37.4	128.5	194.4	2.6
6	10:06	10.5	36.9	125.8	231.3	2.6
7	10:07	10.5	36.9	125.4	312.8	2.5
8	10:08	10.6	37.1	128.8	300.6	2.5
9	10:09	10.6	37.7	129.8	286.1	2.5
10	10:10	10.7	37.6	129.2	339.8	2.7
11	10:11	10.7	37.9	128.2	434.6	2.6
12	10:12	10.7	37.3	128.2	411.9	2.7
13	10:13	10.7	36.9	127.8	332.9	2.4
14	10:14	10.7	37.5	127.6	349.0	2.8
15	10:15	10.8	38.0	127.1	436.9	2.5
16	10:16	10.8	37.6	127.7	443.3	2.3
17	10:17	10.7	37.5	126.4	580.4	2.4
18	10:18	10.8	37.4	125.4	661.2	2.4
19	10:19	10.8	37.3	125.4	591.7	2.2
20	10:20	10.6	36.0	127.3	423.5	2.4
21	10:21	10.6	35.9	127.5	474.4	2.4
<b>Average</b>		<b>10.7</b>	<b>38.0</b>	<b>127.7</b>	<b>388.8</b>	<b>2.5</b>
C <sub>o</sub> pre		0.1	0.0	0.4	-1.1	
C <sub>o</sub> post		0.1	-0.2	0.2	-1.4	
<b>C<sub>o</sub></b>		<b>0.1</b>	<b>-0.1</b>	<b>0.3</b>	<b>-1.3</b>	
C <sub>m</sub> pre		19.3	62.6	147.2	327.5	
C <sub>m</sub> post		19.2	63.3	147.3	327.7	
<b>C<sub>m</sub></b>		<b>19.3</b>	<b>63.0</b>	<b>147.3</b>	<b>327.6</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.6</b>	<b>38.0</b>	<b>127.4</b>	<b>387.8</b>	

**PC16-31**  
**PacifiCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #8**

Start Time      10:38  
Run Length      21  
Stop Time      10:58

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	10:38	10.5	36.1	130.4	326.8	1.8
2	10:39	10.5	36.4	130.5	335.1	1.7
3	10:40	10.6	38.2	128.9	406.1	2.0
4	10:41	10.5	39.0	129.3	349.7	1.8
5	10:42	10.4	38.9	129.8	381.2	2.0
6	10:43	10.5	38.4	129.5	392.4	2.2
7	10:44	10.5	37.8	130.3	351.1	2.1
8	10:45	10.5	37.3	130.6	241.9	2.2
9	10:46	10.4	36.6	131.8	201.6	2.0
10	10:47	10.4	36.1	130.2	239.2	1.9
11	10:48	10.4	35.3	130.4	256.5	2.3
12	10:49	10.4	34.8	129.8	247.9	2.1
13	10:50	10.4	34.8	129.6	247.6	2.1
14	10:51	10.5	34.3	128.8	324.1	2.2
15	10:52	10.4	33.6	129.3	332.6	2.2
16	10:53	10.5	34.6	129.9	382.4	2.2
17	10:54	10.5	34.8	130.1	391.8	2.4
18	10:55	10.6	35.2	131.7	346.8	2.1
19	10:56	10.5	34.7	132.2	241.9	2.0
20	10:57	10.6	36.0	131.0	313.4	2.0
21	10:58	10.6	35.5	133.1	261.7	2.2
<b>Average</b>		<b>10.5</b>	<b>36.1</b>	<b>130.3</b>	<b>312.9</b>	<b>2.1</b>
C <sub>o</sub> pre		0.1	-0.2	0.2	-1.4	
C <sub>o</sub> post		0.0	-0.1	0.1	1.4	
<b>C<sub>o</sub></b>		<b>0.1</b>	<b>-0.2</b>	<b>0.2</b>	<b>0.0</b>	
C <sub>m</sub> pre		19.2	63.3	147.3	327.7	
C <sub>m</sub> post		19.3	63.2	147.1	330.1	
<b>C<sub>m</sub></b>		<b>19.3</b>	<b>63.3</b>	<b>147.2</b>	<b>328.9</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.4</b>	<b>36.0</b>	<b>130.1</b>	<b>311.1</b>	

**PC16-31**  
**PacificCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #9**

Start Time 11:14  
Run Length 21  
Stop Time 11:34

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	11:14	10.3	35.1	135.1	146.9	1.7
2	11:15	10.3	35.0	133.3	180.0	1.7
3	11:16	10.4	34.9	132.6	222.5	1.8
4	11:17	10.3	34.3	134.2	231.5	1.7
5	11:18	10.4	34.7	133.8	285.4	1.4
6	11:19	10.4	34.4	134.0	286.2	1.8
7	11:20	10.4	34.1	133.3	264.3	1.8
8	11:21	10.4	34.4	133.2	267.1	1.9
9	11:22	10.4	34.4	132.9	280.3	2.0
10	11:23	10.4	34.4	131.8	298.2	1.8
11	11:24	10.4	34.5	131.4	349.7	1.8
12	11:25	10.5	35.4	130.0	411.1	1.9
13	11:26	10.5	35.9	131.0	403.0	1.6
14	11:27	10.5	36.4	130.1	444.3	2.0
15	11:28	10.5	37.3	131.3	460.7	2.0
16	11:29	10.5	37.1	132.2	399.8	1.9
17	11:30	10.4	36.8	132.0	404.6	2.0
18	11:31	10.4	36.7	132.5	367.4	1.8
19	11:32	10.4	36.4	132.5	381.7	1.8
20	11:33	10.3	35.9	133.2	288.4	1.8
21	11:34	10.3	34.7	132.9	283.1	1.8
<b>Average</b>		<b>10.4</b>	<b>35.4</b>	<b>132.5</b>	<b>317.0</b>	<b>1.8</b>
C <sub>o</sub> pre		0.0	-0.1	0.1	1.4	
C <sub>o</sub> post		0.0	-0.2	0.0	1.0	
<b>C<sub>o</sub></b>		<b>0.0</b>	<b>-0.2</b>	<b>0.1</b>	<b>1.2</b>	
C <sub>m</sub> pre		19.3	63.2	147.1	330.1	
C <sub>m</sub> post		19.1	62.5	147.3	328.1	
<b>C<sub>m</sub></b>		<b>19.2</b>	<b>62.9</b>	<b>147.2</b>	<b>329.1</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.4</b>	<b>35.5</b>	<b>132.3</b>	<b>314.9</b>	

**PC16-31**  
**PacificCorp**  
**Huntington Unit 1**  
**6/29/2016**  
**Test Run #10**

Start Time 11:52  
Run Length 21  
Stop Time 12:12

Uncorrected Analyzer Data

Minute	Time	CO <sub>2</sub> %vw	SO <sub>2</sub> ppmvw	NO <sub>x</sub> ppmvw	CO ppmvw	NO <sub>2</sub> ppmvw
1	11:52	10.3	35.7	134.0	278.3	1.7
2	11:53	10.3	35.8	133.4	233.9	1.7
3	11:54	10.3	35.7	133.3	220.6	1.8
4	11:55	10.2	36.0	131.6	257.9	1.6
5	11:56	10.3	35.9	131.6	292.6	1.5
6	11:57	10.4	36.3	129.6	205.7	1.7
7	11:58	10.4	35.9	130.1	144.1	1.5
8	11:59	10.4	35.3	130.2	133.6	2.0
9	12:00	10.5	35.9	129.2	184.6	1.8
10	12:01	10.5	35.1	129.4	180.7	1.7
11	12:02	10.4	34.2	128.7	127.3	1.7
12	12:03	10.5	34.4	127.3	138.0	1.9
13	12:04	10.6	35.0	126.6	162.6	1.8
14	12:05	10.6	34.8	127.3	150.7	1.5
15	12:06	10.6	34.6	126.7	186.2	1.8
16	12:07	10.6	34.5	125.9	188.2	1.8
17	12:08	10.6	34.6	126.2	183.7	1.7
18	12:09	10.6	35.7	125.1	245.1	1.7
19	12:10	10.7	35.3	127.6	201.4	1.9
20	12:11	10.6	34.7	127.3	175.5	1.7
21	12:12	10.7	35.3	125.3	232.1	1.7
<b>Average</b>		<b>10.5</b>	<b>35.3</b>	<b>128.9</b>	<b>196.3</b>	<b>1.7</b>
C <sub>o</sub> pre		0.0	-0.2	0.0	1.0	
C <sub>o</sub> post		0.1	0.0	0.1	0.9	
<b>C<sub>o</sub></b>		<b>0.1</b>	<b>-0.1</b>	<b>0.1</b>	<b>1.0</b>	
C <sub>m</sub> pre		19.1	62.5	147.3	328.1	
C <sub>m</sub> post		19.4	63.0	147.3	326.9	
<b>C<sub>m</sub></b>		<b>19.3</b>	<b>62.8</b>	<b>147.3</b>	<b>327.5</b>	
C <sub>ma</sub>		19.2	62.9	147.0	327.0	
Corrected Average:		<b>10.4</b>	<b>35.4</b>	<b>128.6</b>	<b>195.6</b>	

Time	CO2	SO2	NOx	CO	Calibration Error Tests
6/29/16 5:30:01	<b>0.0</b>	1.5	<b>334.3</b>	0.5	
6/29/16 5:30:11	<b>0.0</b>	1.6	<b>334.0</b>	0.9	
6/29/16 5:30:21	<b>0.0</b>	1.7	<b>334.2</b>	1.4	
6/29/16 5:30:31	<b>0.0</b>	1.7	<b>334.4</b>	1.5	
6/29/16 5:30:41	<b>0.0</b>	1.6	<b>334.2</b>	0.6	
6/29/16 5:30:51	0.0	1.8	334.2	-0.3	
6/29/16 5:31:01	0.0	1.7	334.1	-0.6	
6/29/16 5:31:11	0.0	1.7	327.9	-1.0	
6/29/16 5:31:21	0.5	1.7	295.9	-0.8	
6/29/16 5:31:31	2.2	0.8	243.2	-1.6	
6/29/16 5:31:41	4.5	0.3	109.5	-2.7	
6/29/16 5:31:51	7.4	-0.1	2.4	-3.7	
6/29/16 5:32:01	11.1	-0.1	1.7	-4.4	
6/29/16 5:32:11	15.5	-0.3	1.1	-4.1	
6/29/16 5:32:21	19.0	-0.4	1.2	-4.0	
6/29/16 5:32:31	19.1	-0.2	0.6	-4.5	
6/29/16 5:32:41	19.2	-0.4	0.7	-4.3	
6/29/16 5:32:51	19.1	-0.3	0.7	-4.2	
6/29/16 5:33:01	19.2	-0.3	0.2	-4.1	
6/29/16 5:33:11	19.1	-0.5	0.4	-4.2	
6/29/16 5:33:21	19.2	-0.5	0.6	-3.5	
6/29/16 5:33:31	19.2	-0.3	0.7	-3.8	
6/29/16 5:33:41	19.2	-0.4	0.4	-3.6	
6/29/16 5:33:51	19.3	-0.7	0.3	-4.1	
6/29/16 5:34:01	19.2	-0.5	0.5	-1.7	
6/29/16 5:34:11	19.2	-0.1	0.2	-0.8	
6/29/16 5:34:21	19.3	0.1	0.1	-1.5	
6/29/16 5:34:31	19.2	-0.2	0.3	-2.1	
6/29/16 5:34:41	19.2	0.0	0.1	-2.0	
6/29/16 5:34:51	<b>19.2</b>	-0.3	<b>0.2</b>	-0.3	
6/29/16 5:35:01	<b>19.2</b>	-0.3	<b>0.0</b>	<b>0.0</b>	
6/29/16 5:35:11	<b>19.2</b>	-0.4	<b>0.2</b>	<b>0.0</b>	
6/29/16 5:35:21	<b>19.2</b>	0.0	<b>-0.1</b>	<b>-0.5</b>	
6/29/16 5:35:31	<b>19.2</b>	<b>-0.1</b>	<b>0.0</b>	<b>-0.5</b>	
6/29/16 5:35:41	19.2	<b>-0.1</b>	0.2	<b>-0.2</b>	
6/29/16 5:35:51	19.2	<b>-0.1</b>	0.0	0.8	
6/29/16 5:36:01	19.2	<b>-0.2</b>	-0.1	1.2	
6/29/16 5:36:11	18.8	-0.2	0.3	0.4	
6/29/16 5:36:21	16.9	-0.3	1.6	-0.3	
6/29/16 5:36:31	14.8	-0.3	2.2	-0.1	
6/29/16 5:36:41	12.9	-0.2	1.0	1.4	
6/29/16 5:36:51	11.1	-0.2	0.1	2.6	
6/29/16 5:37:01	9.5	0.0	0.3	3.7	
6/29/16 5:37:11	8.2	0.0	0.2	3.2	
6/29/16 5:37:21	8.0	-0.1	-0.1	1.6	
6/29/16 5:37:31	<b>8.0</b>	-0.1	0.0	1.4	
6/29/16 5:37:41	<b>8.0</b>	-0.2	-0.1	1.3	
6/29/16 5:37:51	<b>8.0</b>	-0.2	0.1	1.2	
6/29/16 5:38:01	8.0	-0.3	0.1	1.4	
6/29/16 5:38:11	7.9	0.1	0.3	2.2	
6/29/16 5:38:21	7.9	-0.4	0.0	3.1	
6/29/16 5:38:31	7.9	-0.1	0.2	2.9	
6/29/16 5:38:41	7.8	-0.3	0.1	2.4	
6/29/16 5:38:51	7.1	10.9	0.0	1.7	
6/29/16 5:39:01	5.4	50.3	0.2	1.6	
6/29/16 5:39:11	3.9	92.1	0.0	1.3	
6/29/16 5:39:21	2.6	112.6	0.0	1.7	
6/29/16 5:39:31	1.4	124.8	0.0	3.2	
6/29/16 5:39:41	0.5	131.9	0.2	4.2	
6/29/16 5:39:51	0.0	137.2	0.2	5.8	
6/29/16 5:40:01	0.0	140.1	0.1	6.9	
6/29/16 5:40:11	0.0	141.9	0.1	6.5	
6/29/16 5:40:21	0.0	142.7	0.1	5.1	
6/29/16 5:40:31	0.0	143.5	0.3	4.9	
6/29/16 5:40:41	0.0	144.1	0.1	5.2	
6/29/16 5:40:51	-0.1	144.8	0.1	5.6	
6/29/16 5:41:01	-0.1	145.5	0.2	6.6	
6/29/16 5:41:11	0.0	144.5	0.3	6.4	
6/29/16 5:41:21	-0.1	144.6	0.2	6.1	
6/29/16 5:41:31	-0.1	145.9	-0.1	4.5	
6/29/16 5:41:41	-0.1	145.7	0.1	3.4	
6/29/16 5:41:51	-0.1	147.5	-0.1	3.0	

Time	CO2	SO2	NOx	CO
6/29/16 5:42:01	-0.1	148.2	-0.1	3.1
6/29/16 5:42:11	-0.1	<b>147.9</b>	0.1	3.5
6/29/16 5:42:21	-0.1	<b>147.3</b>	0.3	4.1
6/29/16 5:42:31	-0.1	<b>147.9</b>	-0.1	4.3
6/29/16 5:42:41	-0.1	<b>147.6</b>	0.1	4.2
6/29/16 5:42:51	-0.1	<b>146.9</b>	0.0	3.3
6/29/16 5:43:01	-0.1	145.5	0.1	6.1
6/29/16 5:43:11	0.0	116.8	0.2	25.2
6/29/16 5:43:21	0.0	69.9	0.2	77.6
6/29/16 5:43:31	0.0	41.2	0.0	157.1
6/29/16 5:43:41	0.0	26.2	0.1	238.0
6/29/16 5:43:51	0.0	16.7	0.0	292.6
6/29/16 5:44:01	0.0	11.5	0.1	317.7
6/29/16 5:44:11	0.0	7.5	0.2	326.1
6/29/16 5:44:21	0.0	5.0	0.1	328.7
6/29/16 5:44:31	0.0	3.2	0.1	330.8
6/29/16 5:44:41	0.0	2.3	0.1	331.7
6/29/16 5:44:51	0.0	1.9	0.0	331.8
6/29/16 5:45:01	0.0	1.5	0.0	331.0
6/29/16 5:45:11	0.0	1.0	0.0	331.0
6/29/16 5:45:21	0.0	0.9	0.3	331.8
6/29/16 5:45:31	0.0	1.0	0.1	332.3
6/29/16 5:45:41	0.0	0.8	0.1	332.0
6/29/16 5:45:51	0.0	0.5	0.1	326.9
6/29/16 5:46:01	0.0	0.6	0.0	326.7
6/29/16 5:46:11	0.0	0.4	-0.1	326.0
6/29/16 5:46:21	0.0	0.6	0.0	325.8
6/29/16 5:46:31	0.0	0.2	0.1	<b>326.0</b>
6/29/16 5:46:41	0.0	0.4	0.0	<b>327.5</b>
6/29/16 5:46:51	0.0	0.3	0.3	<b>327.9</b>
6/29/16 5:47:01	0.0	2.6	0.3	323.2
6/29/16 5:47:11	0.0	16.1	-0.1	300.0
6/29/16 5:47:21	0.0	36.3	-0.1	243.9
6/29/16 5:47:31	0.0	47.6	0.1	164.4
6/29/16 5:47:41	0.0	53.1	0.0	86.5
6/29/16 5:47:51	0.0	56.3	-0.1	36.3
6/29/16 5:48:01	0.0	58.7	0.1	13.9
6/29/16 5:48:11	0.0	60.1	0.1	8.1
6/29/16 5:48:21	0.0	61.2	0.1	7.1
6/29/16 5:48:31	0.0	61.3	0.0	6.9
6/29/16 5:48:41	0.0	62.2	0.1	6.2
6/29/16 5:48:51	0.0	62.3	0.0	5.8
6/29/16 5:49:01	0.0	62.9	0.1	5.0
6/29/16 5:49:11	0.0	62.7	0.0	4.3
6/29/16 5:49:21	0.0	62.7	-0.1	4.2
6/29/16 5:49:31	0.0	62.8	0.1	4.5
6/29/16 5:49:41	0.0	63.1	0.2	4.3
6/29/16 5:49:51	0.0	62.9	0.1	5.4
6/29/16 5:50:01	0.0	<b>63.0</b>	0.2	6.4
6/29/16 5:50:11	0.0	<b>63.0</b>	0.0	7.0
6/29/16 5:50:21	0.0	<b>63.1</b>	0.3	6.3
6/29/16 5:50:31	0.0	62.5	0.0	5.8
6/29/16 5:50:41	0.0	62.4	0.0	6.2
6/29/16 5:50:51	0.0	62.6	0.0	6.6
6/29/16 5:51:01	0.0	58.8	-0.1	6.2
6/29/16 5:51:11	0.0	42.1	14.1	5.8
6/29/16 5:51:21	0.0	24.8	85.3	4.9
6/29/16 5:51:31	0.0	15.9	143.2	5.7
6/29/16 5:51:41	0.0	10.8	144.7	6.6
6/29/16 5:51:51	0.0	7.9	145.7	8.1
6/29/16 5:52:01	0.0	5.4	146.0	7.4
6/29/16 5:52:11	0.0	4.0	146.4	6.7
6/29/16 5:52:21	0.0	3.1	146.3	5.5
6/29/16 5:52:31	0.0	2.1	146.8	5.0
6/29/16 5:52:41	0.0	1.9	146.4	5.9
6/29/16 5:52:51	0.0	1.4	146.4	6.7
6/29/16 5:53:01	0.0	1.5	146.4	7.1
6/29/16 5:53:11	0.0	1.2	146.4	6.5
6/29/16 5:53:21	0.0	1.1	146.1	7.1
6/29/16 5:53:31	0.0	1.2	<b>146.4</b>	6.9
6/29/16 5:53:41	0.0	1.0	<b>146.5</b>	5.3
6/29/16 5:53:51	0.0	1.0	<b>146.5</b>	4.3

Time	CO2	SO2	NOx	CO
6/29/16 5:54:01	0.0	1.1	146.3	5.5
6/29/16 5:54:11	0.0	1.0	131.7	15.0
6/29/16 5:54:21	0.0	0.6	59.0	39.3
6/29/16 5:54:31	0.0	0.5	0.7	74.6
6/29/16 5:54:41	0.0	0.2	0.5	111.4
6/29/16 5:54:51	0.0	0.2	0.1	136.1
6/29/16 5:55:01	0.0	0.0	0.2	147.4
6/29/16 5:55:11	0.0	0.2	0.1	150.0
6/29/16 5:55:21	0.0	0.1	-0.1	149.4
6/29/16 5:55:31	0.0	0.0	-0.2	149.2
6/29/16 5:55:41	0.0	0.0	0.1	148.8
6/29/16 5:55:51	0.0	-0.1	0.1	<b>149.2</b>
6/29/16 5:56:01	0.0	-0.1	0.1	<b>150.4</b>
6/29/16 5:56:11	0.0	-0.2	-0.1	<b>150.7</b>
6/29/16 5:56:21	0.0	0.0	-0.1	<b>151.8</b>

Time	CO2	SO2	NOx	CO	R1 PostCal
6/29/16 6:25:31	0.1	-0.2	<b>0.0</b>	323.3	
6/29/16 6:25:41	0.1	-0.1	<b>0.0</b>	326.5	
6/29/16 6:25:51	0.1	-0.2	<b>0.0</b>	327.9	
6/29/16 6:26:01	0.1	-0.4	<b>0.0</b>	328.5	
6/29/16 6:26:11	0.1	<b>-0.2</b>	-0.1	328.6	
6/29/16 6:26:21	<b>0.1</b>	<b>-0.2</b>	0.1	328.9	
6/29/16 6:26:31	<b>0.1</b>	<b>-0.2</b>	0.0	<b>329.9</b>	
6/29/16 6:26:41	<b>0.1</b>	<b>-0.1</b>	-0.2	<b>330.3</b>	
6/29/16 6:26:51	<b>0.1</b>	-0.1	0.2	<b>329.6</b>	
6/29/16 6:27:01	<b>0.1</b>	-0.2	-0.1	<b>329.1</b>	
6/29/16 6:27:11	0.1	0.4	0.0	325.7	
6/29/16 6:27:21	0.1	12.2	0.1	305.8	
6/29/16 6:27:31	0.1	33.2	0.2	253.7	
6/29/16 6:27:41	0.1	46.0	0.2	176.7	
6/29/16 6:27:51	0.1	52.8	-0.1	97.8	
6/29/16 6:28:01	0.1	56.7	0.0	44.3	
6/29/16 6:28:11	0.1	58.7	-0.1	18.6	
6/29/16 6:28:21	0.1	60.1	0.1	10.9	
6/29/16 6:28:31	0.1	60.6	-0.2	9.1	
6/29/16 6:28:41	0.1	61.7	0.0	6.9	
6/29/16 6:28:51	0.1	61.8	-0.1	7.0	
6/29/16 6:29:01	0.1	62.0	0.2	7.5	
6/29/16 6:29:11	0.1	<b>62.4</b>	0.0	8.2	
6/29/16 6:29:21	0.1	<b>63.1</b>	0.0	7.9	
6/29/16 6:29:31	0.1	<b>62.6</b>	-0.1	8.4	
6/29/16 6:29:41	0.1	<b>62.7</b>	0.0	8.4	
6/29/16 6:29:51	0.1	62.5	0.1	8.3	
6/29/16 6:30:01	0.1	62.7	0.0	7.0	
6/29/16 6:30:11	0.1	57.5	11.7	6.5	
6/29/16 6:30:21	0.1	39.3	70.4	6.6	
6/29/16 6:30:31	0.1	23.2	120.5	7.3	
6/29/16 6:30:41	0.1	14.4	134.5	7.9	
6/29/16 6:30:51	0.1	9.3	145.6	7.9	
6/29/16 6:31:01	0.1	6.3	<b>146.1</b>	7.4	
6/29/16 6:31:11	0.1	4.5	<b>146.7</b>	6.8	
6/29/16 6:31:21	0.1	3.1	<b>146.3</b>	6.5	
6/29/16 6:31:31	0.1	2.3	<b>146.5</b>	6.2	
6/29/16 6:31:41	0.1	1.7	146.7	6.4	
6/29/16 6:31:51	0.1	1.5	147.0	6.0	
6/29/16 6:32:01	0.1	1.2	146.7	6.4	
6/29/16 6:32:11	0.2	1.1	139.1	7.3	
6/29/16 6:32:21	1.1	1.0	102.0	7.4	
6/29/16 6:32:31	2.9	0.4	65.1	8.0	
6/29/16 6:32:41	5.3	0.2	29.5	6.7	
6/29/16 6:32:51	8.4	0.1	0.5	6.2	
6/29/16 6:33:01	12.3	-0.1	0.3	4.8	
6/29/16 6:33:11	16.6	-0.3	0.1	2.7	
6/29/16 6:33:21	18.9	-0.2	0.0	1.7	
6/29/16 6:33:31	18.9	-0.1	-0.1	1.7	
6/29/16 6:33:41	19.0	-0.3	0.1	3.3	
6/29/16 6:33:51	19.0	-0.2	0.1	4.5	
6/29/16 6:34:01	19.0	-0.1	0.1	4.4	
6/29/16 6:34:11	19.3	-0.2	0.3	4.3	
6/29/16 6:34:21	19.2	-0.1	-0.3	3.4	
6/29/16 6:34:31	<b>19.2</b>	-0.1	0.0	3.5	
6/29/16 6:34:41	<b>19.2</b>	-0.1	0.0	3.0	
6/29/16 6:34:51	<b>19.2</b>	-0.1	-0.1	<b>1.0</b>	
6/29/16 6:35:01	<b>19.2</b>	-0.2	0.1	<b>1.0</b>	
6/29/16 6:35:11	<b>19.2</b>	-0.2	0.1	<b>0.1</b>	

Time	CO2	SO2	NOx	CO	R2 PostCal
6/29/16 7:03:41	19.3	0.1	0.2	2.6	
6/29/16 7:03:51	19.2	0.0	0.1	2.0	
6/29/16 7:04:01	19.2	-0.2	0.2	2.1	
6/29/16 7:04:11	19.2	-0.3	-0.1	2.9	
6/29/16 7:04:21	19.2	-0.1	-0.1	4.2	
6/29/16 7:04:31	19.2	-0.2	0.0	4.8	
6/29/16 7:04:41	18.7	-0.2	0.0	4.4	
6/29/16 7:04:51	15.8	0.2	14.2	2.9	
6/29/16 7:05:01	11.4	0.3	85.3	2.7	
6/29/16 7:05:11	7.7	0.5	143.0	3.1	
6/29/16 7:05:21	4.7	0.7	144.7	5.1	
6/29/16 7:05:31	2.4	0.4	146.1	5.8	
6/29/16 7:05:41	0.8	0.3	146.1	6.0	
6/29/16 7:05:51	0.1	0.7	146.5	6.4	
6/29/16 7:06:01	0.1	0.8	146.3	6.2	
6/29/16 7:06:11	0.1	0.7	146.4	6.0	
6/29/16 7:06:21	0.0	0.5	146.5	5.8	
6/29/16 7:06:31	0.0	0.6	146.8	6.1	
6/29/16 7:06:41	0.0	0.6	146.6	6.0	
6/29/16 7:06:51	0.0	0.6	137.1	8.1	
6/29/16 7:07:01	0.0	0.5	88.8	23.6	
6/29/16 7:07:11	0.0	0.2	45.8	70.3	
6/29/16 7:07:21	0.0	0.0	20.9	144.7	
6/29/16 7:07:31	0.0	0.0	0.5	226.4	
6/29/16 7:07:41	0.0	-0.1	0.5	283.9	
6/29/16 7:07:51	0.0	-0.1	0.4	313.2	
6/29/16 7:08:01	0.0	-0.1	0.5	323.2	
6/29/16 7:08:11	0.0	-0.2	0.0	325.4	
6/29/16 7:08:21	0.0	-0.3	0.1	325.9	
6/29/16 7:08:31	0.0	-0.5	0.0	325.4	
6/29/16 7:08:41	0.0	-0.3	0.0	325.7	
6/29/16 7:08:51	-0.1	-0.4	0.1	325.6	
6/29/16 7:09:01	0.0	-0.3	0.0	325.2	
6/29/16 7:09:11	0.0	-0.5	-0.2	325.4	
6/29/16 7:09:21	0.0	-0.7	0.0	326.0	
6/29/16 7:09:31	-0.1	-0.6	0.1	326.5	
6/29/16 7:09:41	-0.1	-0.4	0.1	326.2	
6/29/16 7:09:51	-0.1	7.0	-0.1	314.6	
6/29/16 7:10:01	-0.1	25.9	0.3	275.2	
6/29/16 7:10:11	-0.1	42.5	0.2	204.0	
6/29/16 7:10:21	-0.1	50.5	0.2	120.0	
6/29/16 7:10:31	-0.1	55.1	0.0	55.9	
6/29/16 7:10:41	-0.1	57.6	-0.1	21.3	
6/29/16 7:10:51	-0.1	59.4	0.1	9.6	
6/29/16 7:11:01	-0.1	60.9	0.0	7.7	
6/29/16 7:11:11	-0.1	61.9	-0.1	7.7	
6/29/16 7:11:21	-0.1	62.0	0.2	7.8	
6/29/16 7:11:31	-0.1	62.3	0.2	6.4	
6/29/16 7:11:41	-0.1	62.6	0.0	6.0	
6/29/16 7:11:51	-0.1	62.6	-0.1	5.1	
6/29/16 7:12:01	-0.1	62.2	0.0	5.6	
6/29/16 7:12:11	-0.1	62.1	0.0	5.7	
6/29/16 7:12:21	-0.1	62.7	-0.1	6.1	

Time	CO2	SO2	NOx	CO	R3 PostCal
6/29/16 7:41:11	<b>0.0</b>	<b>62.8</b>	<b>0.0</b>	7.9	
6/29/16 7:41:21	<b>0.0</b>	<b>62.7</b>	<b>0.1</b>	8.8	
6/29/16 7:41:31	<b>0.0</b>	<b>62.3</b>	<b>0.1</b>	8.1	
6/29/16 7:41:41	<b>0.0</b>	<b>62.9</b>	<b>-0.1</b>	7.1	
6/29/16 7:41:51	0.0	63.2	0.1	7.4	
6/29/16 7:42:01	0.0	63.3	0.0	7.7	
6/29/16 7:42:11	0.0	63.3	0.0	7.3	
6/29/16 7:42:21	0.0	63.0	0.0	8.9	
6/29/16 7:42:31	0.0	51.9	-0.1	25.9	
6/29/16 7:42:41	-0.1	31.8	0.1	75.4	
6/29/16 7:42:51	0.0	18.3	0.2	151.6	
6/29/16 7:43:01	-0.1	11.4	0.1	232.9	
6/29/16 7:43:11	0.0	7.5	0.0	289.5	
6/29/16 7:43:21	-0.1	4.8	0.2	317.8	
6/29/16 7:43:31	-0.1	2.7	-0.1	326.5	
6/29/16 7:43:41	-0.1	1.7	0.0	328.0	
6/29/16 7:43:51	-0.1	1.0	0.2	328.1	
6/29/16 7:44:01	-0.1	0.8	0.0	<b>327.8</b>	
6/29/16 7:44:11	-0.1	0.7	-0.1	<b>326.6</b>	
6/29/16 7:44:21	-0.1	0.4	0.1	<b>326.7</b>	
6/29/16 7:44:31	-0.1	0.3	0.1	327.3	
6/29/16 7:44:41	-0.1	0.1	0.2	327.7	
6/29/16 7:44:51	-0.1	0.2	-0.1	326.8	
6/29/16 7:45:01	-0.1	0.2	0.1	326.9	
6/29/16 7:45:11	-0.1	-0.1	-0.1	329.0	
6/29/16 7:45:21	-0.1	0.1	0.1	329.9	
6/29/16 7:45:31	-0.1	-0.4	8.5	328.3	
6/29/16 7:45:41	-0.1	0.3	51.0	311.2	
6/29/16 7:45:51	-0.1	0.4	90.9	264.4	
6/29/16 7:46:01	-0.1	0.6	121.5	189.6	
6/29/16 7:46:11	-0.1	0.8	145.8	108.1	
6/29/16 7:46:21	-0.1	0.8	146.0	50.0	
6/29/16 7:46:31	-0.1	0.9	146.1	19.6	
6/29/16 7:46:41	-0.1	1.0	146.3	8.8	
6/29/16 7:46:51	-0.1	0.9	<b>146.5</b>	7.1	
6/29/16 7:47:01	-0.1	1.0	<b>146.5</b>	7.3	
6/29/16 7:47:11	-0.1	0.7	<b>146.5</b>	8.4	
6/29/16 7:47:21	-0.1	1.0	146.7	9.1	
6/29/16 7:47:31	0.0	0.6	145.4	9.5	
6/29/16 7:47:41	0.4	0.6	140.4	9.8	
6/29/16 7:47:51	2.1	0.6	123.1	9.3	
6/29/16 7:48:01	4.3	0.3	54.9	7.0	
6/29/16 7:48:11	7.2	0.1	0.5	4.3	
6/29/16 7:48:21	10.8	0.0	0.0	1.4	
6/29/16 7:48:31	15.3	-0.2	0.1	1.7	
6/29/16 7:48:41	18.9	-0.3	0.2	2.4	
6/29/16 7:48:51	19.0	-0.3	0.2	4.3	
6/29/16 7:49:01	19.0	-0.1	0.1	4.9	
6/29/16 7:49:11	19.1	-0.3	0.1	4.6	
6/29/16 7:49:21	19.1	-0.2	0.0	3.7	
6/29/16 7:49:31	19.1	<b>-0.1</b>	0.1	2.6	
6/29/16 7:49:41	<b>19.1</b>	<b>-0.3</b>	0.0	3.1	
6/29/16 7:49:51	<b>19.1</b>	<b>-0.4</b>	0.0	<b>2.8</b>	
6/29/16 7:50:01	<b>19.1</b>	-0.5	0.2	<b>2.8</b>	
6/29/16 7:50:11	<b>19.1</b>	-0.1	0.1	<b>3.1</b>	
6/29/16 7:50:21	<b>19.1</b>	0.0	0.2	5.5	

Time	CO2	SO2	NOx	CO	R4 PostCal
6/29/16 8:34:21	19.3	0.1	0.7	1.9	
6/29/16 8:34:31	19.2	0.0	0.5	1.7	
6/29/16 8:34:41	19.2	-0.2	0.7	1.8	
6/29/16 8:34:51	19.2	0.0	0.8	1.7	
6/29/16 8:35:01	19.2	-0.2	0.7	2.2	
6/29/16 8:35:11	19.2	-0.2	0.7	3.1	
6/29/16 8:35:21	19.2	-0.2	0.7	4.1	
6/29/16 8:35:31	18.1	-0.2	14.5	4.6	
6/29/16 8:35:41	13.6	0.0	83.8	4.4	
6/29/16 8:35:51	9.5	0.5	140.0	4.0	
6/29/16 8:36:01	6.2	0.5	143.7	4.0	
6/29/16 8:36:11	3.6	0.5	146.7	4.8	
6/29/16 8:36:21	1.6	0.7	146.9	6.2	
6/29/16 8:36:31	0.3	0.7	147.4	8.6	
6/29/16 8:36:41	0.1	0.6	147.1	9.2	
6/29/16 8:36:51	0.1	0.5	147.0	9.0	
6/29/16 8:37:01	0.0	0.8	146.8	7.4	
6/29/16 8:37:11	0.0	0.7	147.0	7.3	
6/29/16 8:37:21	0.0	0.7	146.5	6.8	
6/29/16 8:37:31	0.0	0.8	136.5	8.6	
6/29/16 8:37:41	0.0	0.4	85.0	25.6	
6/29/16 8:37:51	0.0	0.5	39.6	75.0	
6/29/16 8:38:01	0.0	0.1	18.2	151.6	
6/29/16 8:38:11	0.0	-0.2	0.9	233.7	
6/29/16 8:38:21	0.0	-0.4	0.9	290.1	
6/29/16 8:38:31	0.0	-0.1	0.7	318.1	
6/29/16 8:38:41	0.0	-0.1	0.3	326.5	
6/29/16 8:38:51	0.0	-0.4	0.5	329.3	
6/29/16 8:39:01	0.0	-0.3	0.5	330.2	
6/29/16 8:39:11	0.0	-0.5	0.5	331.0	
6/29/16 8:39:21	0.0	-0.4	0.3	331.1	
6/29/16 8:39:31	0.0	-0.4	0.2	331.4	
6/29/16 8:39:41	0.0	-0.4	0.6	331.1	
6/29/16 8:39:51	0.0	-0.4	0.5	329.7	
6/29/16 8:40:01	0.0	7.2	0.0	318.5	
6/29/16 8:40:11	0.0	26.1	0.2	277.1	
6/29/16 8:40:21	0.0	42.5	0.4	206.6	
6/29/16 8:40:31	0.0	50.9	0.3	123.0	
6/29/16 8:40:41	-0.1	55.7	0.4	59.6	
6/29/16 8:40:51	0.0	58.3	0.4	25.5	
6/29/16 8:41:01	-0.1	60.0	0.6	12.4	
6/29/16 8:41:11	-0.1	61.0	0.2	9.0	
6/29/16 8:41:21	-0.1	61.7	0.2	7.8	
6/29/16 8:41:31	-0.1	62.1	0.4	7.3	
6/29/16 8:41:41	0.0	62.4	0.1	6.4	
6/29/16 8:41:51	-0.1	62.6	0.2	6.3	
6/29/16 8:42:01	-0.1	62.3	0.4	7.6	

Time	CO2	SO2	NOx	CO	R5 PostCal
6/29/16 9:12:41	<b>0.1</b>	<b>62.6</b>	0.6	11.5	
6/29/16 9:12:51	<b>0.1</b>	<b>63.1</b>	0.5	10.1	
6/29/16 9:13:01	<b>0.1</b>	<b>63.4</b>	0.6	9.9	
6/29/16 9:13:11	<b>0.1</b>	<b>63.0</b>	0.2	10.3	
6/29/16 9:13:21	0.1	63.3	0.3	10.7	
6/29/16 9:13:31	0.1	61.7	0.3	14.5	
6/29/16 9:13:41	0.1	46.9	0.1	39.6	
6/29/16 9:13:51	0.1	26.1	0.2	97.8	
6/29/16 9:14:01	0.1	14.9	0.2	179.9	
6/29/16 9:14:11	0.1	9.1	0.2	256.9	
6/29/16 9:14:21	0.1	5.6	0.5	304.6	
6/29/16 9:14:31	0.1	3.5	0.4	325.1	
6/29/16 9:14:41	0.1	2.1	0.3	331.1	
6/29/16 9:14:51	0.1	1.3	0.7	333.8	
6/29/16 9:15:01	0.1	0.9	0.5	333.8	
6/29/16 9:15:11	0.1	0.6	0.1	333.1	
6/29/16 9:15:21	0.1	0.3	0.3	332.0	
6/29/16 9:15:31	0.1	0.3	0.4	331.7	
6/29/16 9:15:41	0.1	0.1	0.3	<b>331.6</b>	
6/29/16 9:15:51	0.1	0.1	0.3	<b>331.6</b>	
6/29/16 9:16:01	0.1	-0.1	0.4	<b>331.5</b>	
6/29/16 9:16:11	0.1	-0.1	11.1	329.8	
6/29/16 9:16:21	0.0	0.3	65.5	312.2	
6/29/16 9:16:31	0.1	0.6	113.0	262.4	
6/29/16 9:16:41	0.0	0.8	131.8	184.4	
6/29/16 9:16:51	0.1	0.9	<b>146.7</b>	107.1	
6/29/16 9:17:01	0.1	0.7	<b>146.7</b>	49.6	
6/29/16 9:17:11	0.1	1.0	147.0	22.8	
6/29/16 9:17:21	0.1	0.8	147.2	14.2	
6/29/16 9:17:31	0.1	1.0	147.3	12.2	
6/29/16 9:17:41	0.1	0.6	147.1	11.5	
6/29/16 9:17:51	0.1	0.9	147.1	10.7	
6/29/16 9:18:01	0.2	0.9	147.3	10.1	
6/29/16 9:18:11	1.1	0.5	132.5	9.7	
6/29/16 9:18:21	3.0	0.3	59.3	9.1	
6/29/16 9:18:31	5.4	-0.1	1.3	8.0	
6/29/16 9:18:41	8.6	-0.1	1.1	6.5	
6/29/16 9:18:51	12.6	-0.1	0.7	5.9	
6/29/16 9:19:01	17.0	-0.2	0.5	5.5	
6/29/16 9:19:11	19.2	0.1	0.4	5.5	
6/29/16 9:19:21	19.2	-0.3	0.4	6.2	
6/29/16 9:19:31	<b>19.3</b>	<b>-0.2</b>	0.1	6.1	
6/29/16 9:19:41	<b>19.3</b>	<b>0.1</b>	0.4	3.0	
6/29/16 9:19:51	<b>19.3</b>	<b>-0.3</b>	<b>0.2</b>	-0.3	
6/29/16 9:20:01	<b>19.3</b>	<b>-0.3</b>	<b>0.1</b>	-0.2	
6/29/16 9:20:11	<b>19.3</b>	<b>-0.2</b>	<b>-0.1</b>	<b>1.0</b>	
6/29/16 9:20:21	<b>19.3</b>	<b>-0.1</b>	<b>-0.1</b>	<b>3.0</b>	
6/29/16 9:20:31	<b>19.3</b>	-0.2	0.2	<b>2.7</b>	
6/29/16 9:20:41	<b>19.3</b>	-0.1	0.3	<b>2.9</b>	

Time	CO2	SO2	NOx	CO	
6/29/16 9:48:41	<b>19.3</b>	0.2	<b>0.4</b>	<b>-2.0</b>	
6/29/16 9:48:51	<b>19.4</b>	<b>0.2</b>	<b>0.3</b>	<b>-1.3</b>	
6/29/16 9:49:01	<b>19.3</b>	-0.1	<b>0.5</b>	<b>-0.6</b>	
6/29/16 9:49:11	<b>19.3</b>	0.0	<b>0.3</b>	<b>-0.5</b>	
6/29/16 9:49:21	<b>19.3</b>	-0.3	0.2	-0.1	
6/29/16 9:49:31	<b>19.0</b>	<b>-0.1</b>	5.0	0.7	
6/29/16 9:49:41	16.8	-0.1	27.9	1.1	
6/29/16 9:49:51	12.2	0.2	56.4	1.2	
6/29/16 9:50:01	8.3	0.4	106.6	1.2	
6/29/16 9:50:11	5.3	0.5	146.7	0.9	
6/29/16 9:50:21	2.9	0.7	147.1	1.7	
6/29/16 9:50:31	1.1	0.6	<b>147.2</b>	2.6	
6/29/16 9:50:41	0.2	0.5	<b>147.2</b>	3.8	
6/29/16 9:50:51	0.2	0.7	<b>147.3</b>	4.6	
6/29/16 9:51:01	0.2	0.7	147.2	4.9	
6/29/16 9:51:11	0.1	0.6	147.7	4.2	
6/29/16 9:51:21	0.1	0.7	147.8	4.1	
6/29/16 9:51:31	0.1	0.4	147.3	3.4	
6/29/16 9:51:41	0.1	0.8	147.3	9.3	
6/29/16 9:51:51	0.1	0.4	132.3	34.7	
6/29/16 9:52:01	0.1	0.3	59.4	92.7	
6/29/16 9:52:11	0.1	0.0	1.1	173.6	
6/29/16 9:52:21	0.1	0.0	1.2	249.4	
6/29/16 9:52:31	0.1	-0.4	0.9	297.5	
6/29/16 9:52:41	0.1	-0.2	0.8	319.3	
6/29/16 9:52:51	<b>0.1</b>	-0.3	0.3	325.9	
6/29/16 9:53:01	<b>0.1</b>	-0.4	0.4	327.6	
6/29/16 9:53:11	<b>0.1</b>	-0.5	0.3	327.6	
6/29/16 9:53:21	<b>0.1</b>	-0.4	0.2	327.0	
6/29/16 9:53:31	<b>0.1</b>	-0.5	0.4	326.3	
6/29/16 9:53:41	<b>0.1</b>	-0.3	0.3	326.2	
6/29/16 9:53:51	0.1	-0.5	0.4	<b>327.1</b>	
6/29/16 9:54:01	0.1	-0.2	0.5	<b>327.7</b>	
6/29/16 9:54:11	0.1	-0.5	0.3	<b>327.7</b>	
6/29/16 9:54:21	0.1	-0.3	0.2	326.7	
6/29/16 9:54:31	0.1	0.0	0.3	325.2	
6/29/16 9:54:41	0.1	-0.1	0.2	324.2	
6/29/16 9:54:51	0.1	-0.5	0.2	324.5	
6/29/16 9:55:01	0.1	-0.3	0.1	325.5	
6/29/16 9:55:11	0.1	-0.4	0.1	326.2	
6/29/16 9:55:21	0.1	-0.5	0.0	325.0	
6/29/16 9:55:31	0.1	10.2	0.3	310.5	
6/29/16 9:55:41	0.1	29.4	0.2	267.2	
6/29/16 9:55:51	0.1	44.5	0.1	196.3	
6/29/16 9:56:01	0.0	51.8	0.1	112.3	
6/29/16 9:56:11	0.1	55.5	0.2	46.1	
6/29/16 9:56:21	0.1	58.1	0.1	15.9	
6/29/16 9:56:31	0.1	60.1	0.1	6.6	
6/29/16 9:56:41	0.1	61.3	0.0	5.2	
6/29/16 9:56:51	0.1	61.8	0.0	6.0	
6/29/16 9:57:01	0.1	62.3	0.1	6.9	
6/29/16 9:57:11	0.1	62.4	0.3	6.6	
6/29/16 9:57:21	0.1	62.7	0.1	6.2	
6/29/16 9:57:31	0.1	62.7	0.0	5.0	
6/29/16 9:57:41	0.1	63.1	-0.1	5.3	
6/29/16 9:57:51	0.1	62.9	0.1	5.4	
6/29/16 9:58:01	0.1	62.7	-0.2	6.3	
6/29/16 9:58:11	0.1	<b>63.2</b>	0.1	5.7	
6/29/16 9:58:21	0.1	<b>62.9</b>	-0.1	6.0	
6/29/16 9:58:31	0.1	<b>62.3</b>	0.0	5.3	
6/29/16 9:58:41	0.1	<b>62.0</b>	0.1	4.9	

Time	CO2	SO2	NOx	CO	R7 PostCal
6/29/16 10:25:51	<b>0.1</b>	<b>63.0</b>	0.3	3.9	
6/29/16 10:26:01	<b>0.1</b>	<b>63.0</b>	0.2	4.5	
6/29/16 10:26:11	<b>0.1</b>	<b>63.5</b>	0.5	6.0	
6/29/16 10:26:21	<b>0.1</b>	<b>63.7</b>	0.3	6.9	
6/29/16 10:26:31	0.1	54.9	0.4	16.0	
6/29/16 10:26:41	0.1	35.0	0.3	55.3	
6/29/16 10:26:51	0.1	18.9	0.5	133.9	
6/29/16 10:27:01	0.1	11.5	0.4	217.2	
6/29/16 10:27:11	0.1	7.4	0.5	279.7	
6/29/16 10:27:21	0.1	5.0	0.5	313.5	
6/29/16 10:27:31	0.0	3.3	0.3	325.1	
6/29/16 10:27:41	0.0	2.1	-0.2	327.4	
6/29/16 10:27:51	0.0	1.4	0.1	<b>328.3</b>	
6/29/16 10:28:01	0.0	0.8	0.1	<b>327.9</b>	
6/29/16 10:28:11	0.0	0.7	-0.1	<b>327.0</b>	
6/29/16 10:28:21	0.1	0.2	0.2	325.6	
6/29/16 10:28:31	0.1	0.4	-0.1	325.7	
6/29/16 10:28:41	0.0	0.2	0.1	326.1	
6/29/16 10:28:51	0.0	-0.1	0.1	326.5	
6/29/16 10:29:01	0.1	0.1	-0.1	326.0	
6/29/16 10:29:11	0.1	0.0	-0.1	325.0	
6/29/16 10:29:21	0.0	0.2	-0.1	322.9	
6/29/16 10:29:31	0.0	0.2	0.1	320.3	
6/29/16 10:29:41	0.0	0.1	0.1	319.3	
6/29/16 10:29:51	0.1	0.2	-0.1	318.9	
6/29/16 10:30:01	0.1	0.3	0.0	316.2	
6/29/16 10:30:11	0.1	0.5	13.8	301.1	
6/29/16 10:30:21	0.1	0.8	82.4	261.7	
6/29/16 10:30:31	0.0	1.0	138.2	189.3	
6/29/16 10:30:41	0.1	0.9	143.2	106.8	
6/29/16 10:30:51	0.0	0.9	<b>147.3</b>	46.7	
6/29/16 10:31:01	0.0	0.7	<b>147.4</b>	15.4	
6/29/16 10:31:11	0.0	0.7	<b>147.4</b>	6.3	
6/29/16 10:31:21	0.0	0.7	<b>147.0</b>	5.4	
6/29/16 10:31:31	0.0	0.6	146.8	5.2	
6/29/16 10:31:41	0.0	0.8	146.9	4.6	
6/29/16 10:31:51	0.0	0.8	147.0	4.1	
6/29/16 10:32:01	0.0	0.5	147.2	3.8	
6/29/16 10:32:11	0.1	0.8	145.5	3.8	
6/29/16 10:32:21	0.6	0.5	137.9	3.6	
6/29/16 10:32:31	2.3	0.5	118.6	4.1	
6/29/16 10:32:41	4.6	0.0	52.9	3.4	
6/29/16 10:32:51	7.5	-0.2	0.7	2.8	
6/29/16 10:33:01	11.2	-0.3	0.5	2.0	
6/29/16 10:33:11	15.6	<b>-0.2</b>	0.5	0.9	
6/29/16 10:33:21	19.1	<b>-0.2</b>	<b>0.4</b>	-0.8	
6/29/16 10:33:31	<b>19.2</b>	<b>-0.3</b>	<b>0.4</b>	<b>-2.2</b>	
6/29/16 10:33:41	<b>19.2</b>	<b>-0.3</b>	<b>0.1</b>	<b>-2.7</b>	
6/29/16 10:33:51	<b>19.2</b>	<b>-0.1</b>	<b>0.0</b>	<b>-1.6</b>	
6/29/16 10:34:01	<b>19.2</b>	-0.1	<b>0.1</b>	<b>-0.7</b>	
6/29/16 10:34:11	<b>19.2</b>	-0.5	0.1	<b>0.1</b>	

Time	CO2	SO2	NOx	CO	R8 PostCal
6/29/16 11:02:01	19.4	<b>0.2</b>	0.3	0.6	
6/29/16 11:02:11	<b>19.3</b>	<b>-0.3</b>	0.5	<b>0.6</b>	
6/29/16 11:02:21	<b>19.3</b>	<b>0.0</b>	<b>0.3</b>	<b>1.1</b>	
6/29/16 11:02:31	<b>19.3</b>	<b>-0.3</b>	<b>0.0</b>	<b>2.1</b>	
6/29/16 11:02:41	<b>19.3</b>	-0.2	<b>0.1</b>	<b>1.9</b>	
6/29/16 11:02:51	<b>19.3</b>	-0.2	0.2	<b>1.1</b>	
6/29/16 11:03:01	19.3	0.1	0.1	2.0	
6/29/16 11:03:11	19.2	-0.1	1.5	2.8	
6/29/16 11:03:21	17.7	-0.2	9.4	2.7	
6/29/16 11:03:31	13.0	0.1	28.5	2.0	
6/29/16 11:03:41	9.0	0.5	93.5	1.6	
6/29/16 11:03:51	5.7	0.6	146.4	2.8	
6/29/16 11:04:01	3.2	0.3	146.8	4.7	
6/29/16 11:04:11	1.3	0.6	147.1	6.8	
6/29/16 11:04:21	0.2	0.4	146.9	8.0	
6/29/16 11:04:31	0.1	0.7	146.8	7.7	
6/29/16 11:04:41	0.1	0.6	<b>146.9</b>	7.0	
6/29/16 11:04:51	0.0	0.7	<b>147.0</b>	7.1	
6/29/16 11:05:01	0.0	0.7	<b>147.3</b>	7.7	
6/29/16 11:05:11	<b>0.0</b>	0.5	140.2	8.7	
6/29/16 11:05:21	<b>0.0</b>	0.6	105.9	17.7	
6/29/16 11:05:31	<b>0.0</b>	0.2	70.6	56.7	
6/29/16 11:05:41	0.0	0.0	31.8	126.0	
6/29/16 11:05:51	0.0	-0.2	0.7	210.4	
6/29/16 11:06:01	0.0	-0.2	0.8	276.2	
6/29/16 11:06:11	0.0	-0.3	0.3	313.4	
6/29/16 11:06:21	0.0	-0.4	0.2	328.3	
6/29/16 11:06:31	0.0	-0.2	0.4	<b>331.6</b>	
6/29/16 11:06:41	0.0	-0.4	0.4	<b>330.3</b>	
6/29/16 11:06:51	0.0	-0.5	-0.2	<b>328.5</b>	
6/29/16 11:07:01	0.0	-0.6	-0.1	327.0	
6/29/16 11:07:11	0.0	-0.3	0.0	327.3	
6/29/16 11:07:21	0.0	-0.3	0.0	328.3	
6/29/16 11:07:31	0.0	-0.4	0.2	328.2	
6/29/16 11:07:41	-0.1	8.5	0.0	316.9	
6/29/16 11:07:51	-0.1	28.1	0.0	275.1	
6/29/16 11:08:01	0.0	43.9	0.2	201.9	
6/29/16 11:08:11	0.0	51.5	0.0	117.0	
6/29/16 11:08:21	-0.1	56.2	-0.1	53.9	
6/29/16 11:08:31	-0.1	58.7	0.2	20.6	
6/29/16 11:08:41	-0.1	60.3	-0.2	9.5	
6/29/16 11:08:51	-0.1	61.2	-0.2	7.7	
6/29/16 11:09:01	-0.1	61.8	0.2	7.8	
6/29/16 11:09:11	-0.1	62.7	-0.1	8.2	
6/29/16 11:09:21	0.0	<b>63.1</b>	-0.1	7.4	
6/29/16 11:09:31	-0.1	<b>62.7</b>	-0.2	6.4	
6/29/16 11:09:41	-0.1	<b>63.2</b>	0.2	5.6	
6/29/16 11:09:51	-0.1	<b>63.6</b>	0.1	6.7	

Time	CO2	SO2	NOx	CO	R9 PostCal
6/29/16 11:38:01	0.0	<b>62.6</b>	0.2	6.1	
6/29/16 11:38:11	0.0	<b>62.1</b>	0.3	6.7	
6/29/16 11:38:21	0.0	<b>62.4</b>	0.4	5.9	
6/29/16 11:38:31	0.0	<b>63.0</b>	0.3	4.1	
6/29/16 11:38:41	0.0	60.4	0.1	7.7	
6/29/16 11:38:51	0.0	44.6	0.2	33.7	
6/29/16 11:39:01	0.0	24.1	0.2	92.3	
6/29/16 11:39:11	0.0	13.6	0.4	173.9	
6/29/16 11:39:21	0.0	8.6	0.3	251.0	
6/29/16 11:39:31	0.0	5.3	0.3	301.8	
6/29/16 11:39:41	0.0	3.5	0.4	324.4	
6/29/16 11:39:51	0.0	1.9	0.4	330.3	
6/29/16 11:40:01	0.0	1.2	0.2	330.0	
6/29/16 11:40:11	<b>0.0</b>	1.0	0.1	330.4	
6/29/16 11:40:21	<b>0.0</b>	0.8	0.2	329.4	
6/29/16 11:40:31	<b>0.0</b>	0.3	-0.1	327.6	
6/29/16 11:40:41	<b>0.0</b>	0.2	0.2	<b>327.5</b>	
6/29/16 11:40:51	<b>0.0</b>	0.4	0.0	<b>327.8</b>	
6/29/16 11:41:01	0.0	0.3	0.1	<b>329.2</b>	
6/29/16 11:41:11	0.0	0.2	-0.2	<b>327.7</b>	
6/29/16 11:41:21	0.0	0.2	-0.1	327.7	
6/29/16 11:41:31	0.0	0.0	0.1	326.1	
6/29/16 11:41:41	-0.1	0.0	0.1	326.7	
6/29/16 11:41:51	-0.1	-0.2	0.0	326.3	
6/29/16 11:42:01	-0.1	-0.1	0.0	327.4	
6/29/16 11:42:11	0.0	-0.4	0.1	327.9	
6/29/16 11:42:21	-0.1	0.0	0.2	328.1	
6/29/16 11:42:31	-0.1	-0.1	0.2	327.8	
6/29/16 11:42:41	-0.1	-0.1	0.1	328.0	
6/29/16 11:42:51	-0.1	-0.1	0.0	329.6	
6/29/16 11:43:01	-0.1	-0.3	0.1	329.9	
6/29/16 11:43:11	-0.1	-0.1	0.1	329.9	
6/29/16 11:43:21	-0.1	-0.3	0.0	329.3	
6/29/16 11:43:31	-0.1	-0.2	-0.1	329.4	
6/29/16 11:43:41	-0.1	0.0	-0.1	330.3	
6/29/16 11:43:51	-0.1	-0.2	-0.2	329.3	
6/29/16 11:44:01	-0.1	0.0	0.0	327.4	
6/29/16 11:44:11	-0.1	-0.1	0.1	326.6	
6/29/16 11:44:21	-0.1	-0.2	0.1	327.3	
6/29/16 11:44:31	-0.1	-0.3	13.7	326.8	
6/29/16 11:44:41	-0.1	0.2	81.8	306.5	
6/29/16 11:44:51	-0.1	0.4	137.4	252.2	
6/29/16 11:45:01	-0.1	0.7	142.8	170.5	
6/29/16 11:45:11	-0.1	0.6	146.7	90.6	
6/29/16 11:45:21	-0.1	0.7	147.0	38.4	
6/29/16 11:45:31	-0.1	0.6	147.4	14.5	
6/29/16 11:45:41	-0.1	0.8	<b>147.3</b>	6.6	
6/29/16 11:45:51	-0.1	0.8	<b>147.2</b>	4.1	
6/29/16 11:46:01	-0.1	0.7	<b>147.4</b>	4.3	
6/29/16 11:46:11	-0.1	0.6	<b>147.3</b>	4.5	
6/29/16 11:46:21	-0.1	0.6	147.2	4.1	
6/29/16 11:46:31	0.2	0.6	133.1	4.6	
6/29/16 11:46:41	1.6	0.4	63.2	4.4	
6/29/16 11:46:51	3.6	0.1	7.3	2.8	
6/29/16 11:47:01	6.6	0.1	3.6	1.4	
6/29/16 11:47:11	9.7	-0.1	0.5	0.1	
6/29/16 11:47:21	14.5	-0.4	0.5	-0.1	
6/29/16 11:47:31	18.7	-0.3	0.3	0.5	
6/29/16 11:47:41	19.1	-0.2	0.0	2.2	
6/29/16 11:47:51	19.1	-0.2	-0.1	2.9	
6/29/16 11:48:01	19.1	-0.1	0.2	2.4	
6/29/16 11:48:11	19.1	-0.1	0.0	1.4	
6/29/16 11:48:21	19.1	-0.5	0.1	0.6	
6/29/16 11:48:31	<b>19.1</b>	<b>-0.2</b>	0.1	0.1	
6/29/16 11:48:41	<b>19.1</b>	<b>-0.2</b>	0.4	<b>0.9</b>	
6/29/16 11:48:51	<b>19.1</b>	<b>-0.3</b>	0.2	<b>0.9</b>	
6/29/16 11:49:01	<b>19.1</b>	<b>-0.1</b>	0.0	<b>1.3</b>	
6/29/16 11:49:11	<b>19.1</b>	<b>-0.2</b>	<b>-0.1</b>	0.3	
6/29/16 11:49:21	<b>19.1</b>	<b>-0.3</b>	<b>0.0</b>	1.1	
6/29/16 11:49:31	19.2	-0.2	0.2	1.7	

Time	CO2	SO2	NOx	CO	R10 PostCal
6/29/16 12:17:31	<b>19.4</b>	0.3	0.3	0.5	
6/29/16 12:17:41	<b>19.4</b>	<b>0.1</b>	<b>0.2</b>	<b>1.8</b>	
6/29/16 12:17:51	<b>19.4</b>	<b>0.0</b>	-0.1	<b>1.8</b>	
6/29/16 12:18:01	<b>19.4</b>	-0.2	<b>0.2</b>	<b>0.8</b>	
6/29/16 12:18:11	19.5	-0.3	<b>0.1</b>	<b>-1.0</b>	
6/29/16 12:18:21	19.5	-0.3	-0.1	-1.7	
6/29/16 12:18:31	19.5	-0.4	0.0	-0.6	
6/29/16 12:18:41	19.5	-0.2	0.0	0.3	
6/29/16 12:18:51	19.4	-0.3	-0.1	1.2	
6/29/16 12:19:01	19.2	-0.5	0.1	0.8	
6/29/16 12:19:11	16.1	0.1	14.5	1.6	
6/29/16 12:19:21	11.6	0.4	86.9	2.9	
6/29/16 12:19:31	7.8	0.7	145.6	2.6	
6/29/16 12:19:41	4.9	0.8	146.1	2.4	
6/29/16 12:19:51	2.6	0.7	146.4	3.3	
6/29/16 12:20:01	0.8	0.8	146.9	4.6	
6/29/16 12:20:11	0.2	0.7	146.8	5.4	
6/29/16 12:20:21	0.2	0.4	<b>147.1</b>	5.6	
6/29/16 12:20:31	0.2	0.8	<b>147.3</b>	5.3	
6/29/16 12:20:41	0.1	0.8	<b>147.4</b>	6.2	
6/29/16 12:20:51	0.1	0.6	132.5	14.2	
6/29/16 12:21:01	0.1	0.5	59.7	51.1	
6/29/16 12:21:11	0.1	0.1	1.4	119.9	
6/29/16 12:21:21	0.1	-0.1	0.8	205.9	
6/29/16 12:21:31	0.1	-0.2	0.5	273.5	
6/29/16 12:21:41	<b>0.1</b>	-0.1	0.4	310.2	
6/29/16 12:21:51	<b>0.1</b>	-0.1	0.2	324.1	
6/29/16 12:22:01	<b>0.1</b>	-0.3	0.1	325.7	
6/29/16 12:22:11	<b>0.1</b>	-0.6	0.0	<b>326.3</b>	
6/29/16 12:22:21	0.1	-0.3	0.1	<b>326.6</b>	
6/29/16 12:22:31	0.1	-0.5	0.0	<b>327.8</b>	
6/29/16 12:22:41	0.1	-0.2	0.2	328.4	
6/29/16 12:22:51	0.1	-0.1	0.0	328.5	
6/29/16 12:23:01	0.1	2.0	0.0	324.8	
6/29/16 12:23:11	0.1	18.0	0.0	301.5	
6/29/16 12:23:21	0.1	38.4	0.1	243.4	
6/29/16 12:23:31	0.1	48.9	0.2	161.5	
6/29/16 12:23:41	0.1	54.4	0.0	83.6	
6/29/16 12:23:51	0.1	57.8	-0.1	35.5	
6/29/16 12:24:01	0.1	59.8	0.1	13.8	
6/29/16 12:24:11	0.1	61.3	0.2	9.1	
6/29/16 12:24:21	0.0	61.4	0.1	8.3	
6/29/16 12:24:31	0.1	61.8	0.1	7.6	
6/29/16 12:24:41	0.1	62.4	0.2	7.7	
6/29/16 12:24:51	0.0	<b>63.0</b>	0.2	6.9	
6/29/16 12:25:01	0.0	<b>63.0</b>	0.1	6.9	

# **Analyzer Interference Check**

To Whom It May Concern:

In an effort to assist our customers with meeting the requirements of the Instrumental Methods for testing, 3A, 6C, 7E, 10, and 20, we are providing a summary of interferences for certain Thermo Scientific analyzers.

The requirement for conducting analyzer interference checks for potential interfering gases is the responsibility of the testing organizations. The Methods do, however, allow the manufacturer of instruments to provide this data. Tests are required to be conducted on the same "make and model" as those being used for method testing.

The information contained in the accompanying tables pertains to the "make" of analyzers under the names of; Thermo Electron Corporation, Thermo Environmental Instruments and Thermo Scientific. The "model" are models; Model 42 for NO, NO<sub>2</sub>, NO<sub>x</sub>, Model 43 for SO<sub>2</sub>, and Model 410i for CO<sub>2</sub>. The specific pollutant detection and analytical technology for each of the above listed specific models have remained the same for the various series of analyzers manufactured over the past years. Therefore, the interference test results shown for iSeries analyzers would produce essentially the same results for C Series and earlier Series of these models.

The potential interference gases test results shown in the tables to follow indicate that none of the Thermo Scientific analyzers tested have a collective analytical detection interference that would sum more than 0.06% of analyzer span value. The acceptance criterion is; the sum of the interference responses must not be greater than 2.5% of analyzer span value.

If you have any questions regarding the information contained herein please do not hesitate to contact us.

Thermo Fisher Scientific



Frank Duckett  
Product Manager, Continuous Gas Analyzers  
Air Quality Instruments

## Thermo Scientific Model 42 NO-NO<sub>2</sub>-NO<sub>x</sub> Analyzer Potential Interference Gas Responses

<i>Potential Interferent</i>		<i>Model 42iLS</i>			<i>Model 42iHL</i>		
<i>Test Gas</i>	<i>Concentration</i>	<i>NO</i>	<i>NO<sub>2</sub></i>	<i>NO<sub>x</sub></i>	<i>NO</i>	<i>NO<sub>2</sub></i>	<i>NO<sub>x</sub></i>
CO <sub>2</sub>	5.20%	0.001	0.004	0.004	0.001	0.003	0.004
CO <sub>2</sub>	15.60%	0	0.003	0.003	0.001	0.004	0.005
H <sub>2</sub> O	1.00%	0	0	0	0.003	0.001	0.004
NO	15 ppm	14.9	0.1	15	15	-0.06	14.99
NO <sub>2</sub>	15 ppm	1.1	14	15	0.4	14.6	15
N <sub>2</sub> O	10 ppm	0	0	0	0	0	0
CO	50 ppm	0	0	0	0	0	0
SO <sub>2</sub>	21 ppm	-0.01	0	-0.01	0.007	0	0.007
CH <sub>4</sub>	50 ppm	0	0	0	0	0	0
HCl	10 ppm	0	0.006	0.006	0	0.004	0.004
NH <sub>3</sub> <sup>1</sup>	10 ppm	0	0	0	0.17	8.9	9.1
<i>Sum of Responses</i>		<b>0.011</b>	<b>0.01</b>	<b>0.02</b>	<b>0.011</b>	<b>0.009</b>	<b>0.02</b>
<i>Span Value</i>		<b>160</b>	<b>152</b>	<b>160</b>	<b>160</b>	<b>152</b>	<b>160</b>
<i>% of Calibration Span</i>		<b>0.01%</b>	<b>0.01%</b>	<b>0.01%</b>	<b>0.01%</b>	<b>0.01%</b>	<b>0.01%</b>

Acceptance Criteria found in Section 13.4 of Method 7E is the sum of responses must not be greater than 2.5% of the analyzer calibration span value.

<sup>1</sup>NH<sub>3</sub> interferent results shown for the Model 42iHL was not used in calculation of interference response check because it is a known interferent with an approximate 1 ppm to 1 ppm positive bias in analyzers using stainless steel NO<sub>2</sub> to NO converters. Thermo recommends that NO<sub>x</sub> analyzers with stainless steel NO<sub>2</sub> to NO converters must use a NH<sub>3</sub> scrubber when testing sources with potential NH<sub>3</sub> in the flue gas.

This document is subject to change without notice.

## Thermo Scientific Model 43 SO<sub>2</sub> and Model 410i CO<sub>2</sub> Analyzer Potential Interference Gas Responses

<i>Potential Interferent</i>		<i>Model 43iLH</i>	<i>Model 410iHL</i>
<i>Test Gas</i>	<i>Concentration</i>	<i>SO<sub>2</sub></i>	<i>CO<sub>2</sub></i>
CO <sub>2</sub>	5.20%	0.03	5.2
CO <sub>2</sub>	15.60%	0.14	15.6
H <sub>2</sub> O	1.00%	-0.05	0
NO	15 ppm	0.2	0
NO <sub>2</sub>	15 ppm	0.06	0
N <sub>2</sub> O	10 ppm	0	0
CO	50 ppm	0	0
SO <sub>2</sub>	21 ppm	21	0
CH <sub>4</sub>	50 ppm	0	0
HCl	10 ppm	0	0
NH <sub>3</sub>	10 ppm	0	0
<i>Sum of Responses</i>		<b>0.45</b>	<b>0</b>
<i>Span Value</i>		<b>800</b>	<b>16</b>
<i>% of Calibration Span</i>		<b>0.06%</b>	<b>0%</b>

*Acceptance Criteria found in Section 13.4 of Method 7E is the sum of responses must not be greater than 2.5% of the analyzer calibration span value.*

*This document is subject to change without notice.*

# **Sample Calculations**

PaciFiCorp  
 Huntington Unit 1  
 6/29/2016  
 Run #1 Sample Calculations

**EPA Method 6C: Determination of Sulfur Dioxide Emissions from Stationary Sources  
 (Instrumental Analyzer Procedure)  
 (40 CFR Part 60, Appendix A-4)**

Variable	Value	Definition	Unit of Measurement
$C_{avg}$	33.7	Average Unadjusted Gas Concentration	ppmvw
$C_0$	-0.2	Average Pre/Post Zero Gas Response	ppmvw
$C_{ma}$	62.9	Concentration of Upscale Calibration Gas	ppm
$C_m$	62.9	Average Pre/Post Upscale Gas Response	ppmvw
$C_{gas}$	33.8	Average Gas Concentration Adjusted for Bias	ppmvw
MW	64.06	Molecular Weight	lb/lb-mole
385.3	385.3	Volume of One Pound of Ideal Gas at Standard Conditions	scf/lb-mole
$F_c$	1800	F Factor from EPA Method 19	scf/mmBtu
$C_w$	5.61E-06	Pollutant Concentration, Wet Basis	pound/wet standard cubic foot
$CO_2\%vw$	10.5	$CO_2$ Concentration	wet volume percent
$E_{lb/mmBtu}$	0.097	Emission Rate	pounds per million British thermal units
$Q_{wsch}$	75,088,838	Exhaust Flow Rate (From EPA Method 2G)	wet standard cubic feet per hour
$E_{lb/hr}$	421.5	Emission Rate	pounds per hour

$$C_{gas} = \frac{(C_{avg} - C_0) \times C_{ma}}{(C_m - C_0)}$$

$$= \frac{(33.7 - (-0.15)) \times 62.9}{(62.85 - (-0.15))}$$

$$= 33.8 \text{ ppmvw} \quad (Eq. 7E-5b)$$

$$C_w = \frac{(C_{gas}) (MW)}{(10^6) (385.3)}$$

$$= \frac{(33.8) (64.06)}{(10^6) (385.3)}$$

$$= 5.61E-06 \text{ lb/scf}$$

$$E_{lb/mmBtu} = \frac{(C_w) (F_c) (100)}{(CO_2\%vw)}$$

$$= \frac{(5.61E-06) (1800) (100)}{(10.5)}$$

$$= 0.097 \text{ lb/mmBtu} \quad (Eq. 19-7)$$

$$E_{lb/hr} = (C_w) (Q_{wsch})$$

$$= (5.61E-06) (75,088,838)$$

$$= 421.5 \text{ lb/hr}$$

# **Field Datasheets**

EMCo Job Code: PC16-31

Client: Pacificor

Source: HTG Unit 1

Date: 6-28-16

Operator: AB

Page \_\_\_\_ of \_\_\_\_

Analyzer Initial Calibration Data Sheet					
Gas	Level	Cylinder #	Concentration	Initial Linearity	Post STRAT
CO <sub>2</sub>	L		0 %	0.0	0.0
	M	034103	8.10 %	8.1	8.0
	H	038146	19.2 %	19.3	
NOX	L		0 %		
	M		0 %		
	H		0 %		
SO <sub>2</sub>	L		0 ppm	-0.1	0.0
	M	057714	148.7 ppm	149.6	149.9
	H	013570	334.3 ppm	334	
CO	L		0 ppm	-0.1	-0.4
	M	059862	62.9 ppm	62.6	62.6
	H	279462	148 ppm	148	

EMCo Job Code: PC16-31

Client: Pacificorp

Source: Huntington U1

Date: 6-29-16

Operator: AP

Page \_\_\_\_ of \_\_\_\_

Analyzer Initial Calibration Data Sheet

Gas	Level	Cylinder #	Concentration	Initial Linearity	Initial Bias
CO <sub>2</sub>	L	03103	0%	0.	0.0
	M	038146	8.1%	8.1+8.0	0
	H	059862	19.2%	19.2	19.2
SO <sub>2</sub>	L	05544	0%	-0.1	-0.1
	M	0528146	62.9 ppm	63.0	63.0
	H	013570	148 ppm	147.5	
NO <sub>x</sub>	L	0528146	0 ppm	0.1	0.1
	M	05544	148.1 ppm	146.5	146.5
	H	033530	334.3 ppm	334.2	
CO	L	026121	0 ppm	-0.2	-0.2
	M	026121	146 ppm	150.5	
	H	033530	327 ppm	327.4	327.4
	O				
	L				
	M				
	H				

EMCo Job Code: PC16-31

Client: Pacificorp

Source: Huntington U1

Date: 6-28-16

Operator: JAS

Page 1 of 2

Analyzer Calibration Data Sheet

Gas	Level	Concentration	Run Start Time	0600	0639	716	810	846	924
			Run Stop Time	0620	059	736	830	906	944
O <sub>2</sub>	0	0 %	Initial Bias	R1	R2	R3	R4	R5	R6
	Span	19.2 %	Uncorrected Run Value:	0.0	0.0	0.0	0.0	0.1	0.1
SO <sub>2</sub>	0	0 ppm	Uncorrected Run Value:	19.2	19.2	19.1	19.2	19.3	19.3
	Span	62.9 ppm	Uncorrected Run Value:	10.5	10.7	10.6	10.5	10.5	10.5
NO <sub>x</sub>	0	0 ppm	Uncorrected Run Value:	-0.1	-0.1	-0.1	-0.3	0.0	-0.2
	Span	146 ppm	Uncorrected Run Value:	62.7	62.4	62.7	62.5	63.0	62.6
CO	0	0 ppm	Uncorrected Run Value:	33.9	34.5	37.0	37.8	37.3	37.2
	Span	327 ppm	Uncorrected Run Value:	0.1	0.0	0.0	0.7	0.0	0.4

EMCo Job Code: PC16-31

Client: Pacificor

Source: Huntington U1

Date: 6-29-16

Operator: AB

Page 2 of 2

Analyzer Calibration Data Sheet

Gas	Level	Concentration	Run Start Time	1001	1038	1114	1152
			Run Stop Time	1021	1058	1134	R9
O2	0	0 %	Initial Bias	R7	R8	R9	R10
	Span	19.2 %	Uncorrected Run Value:	19.2	19.3	19.1	0.1
SO2	0	0 ppm	Uncorrected Run Value:	10.6	10.5	10.4	10.5
	Span	62.9 ppm	Uncorrected Run Value:	-0.1	-0.2	-0.1	-0.2
NOx	0	0 ppm	Uncorrected Run Value:	37.6	36.1	35.4	35.3
	Span	148 ppm	Uncorrected Run Value:	146.5	147.3	147.3	0.1
CO	0	0 ppm	Uncorrected Run Value:	124.7	130.5	132.4	128.4
	Span	327 ppm	Uncorrected Run Value:	327.4	327.7	330.1	326.9

# **CEMS Data**

## RATA Test - Part 75

Plant: HGTN Source: UNIT1

Parameter: SO2PPM  
 Effective Date/Time: 06/29/2016 12:34  
 Monitoring System ID: 111  
 Test Reason: QA-Periodic Quality Assurance  
 Overall RA: 3.71  
 CEMS Time Offset:  
 Test Comment:

Test Number: XML (111-Q2-2016-001) / EDR (1)  
 Frequency: 4QTRS  
 Test Result: Passed  
 Overall BAF: 1

Run	Started	Ended	Reference Value	CEMS Value	Difference	Load	Use
1	06/29/2016 06:00	06/29/2016 06:20	33.8	32.4	1.4	479	Y
2	06/29/2016 06:39	06/29/2016 06:59	34.6	32.9	1.7	483	Y
3	06/29/2016 07:16	06/29/2016 07:36	36.8	35.1	1.7	482	Y
4	06/29/2016 08:10	06/29/2016 08:30	38.0	36.6	1.4	480	Y
5	06/29/2016 08:46	06/29/2016 09:06	33.2	33.4	-0.2	483	Y
6	06/29/2016 09:24	06/29/2016 09:44	37.2	37.9	-0.7	482	Y
7	06/29/2016 10:01	06/29/2016 10:21	38.0	38.3	-0.3	479	Y
8	06/29/2016 10:38	06/29/2016 10:58	36.0	36.2	-0.2	481	Y
9	06/29/2016 11:14	06/29/2016 11:34	35.5	35.0	0.5	481	Y

# Average Data

Plant: HUNTINGTON PLANT

Interval: 1 Minute

Type: Block

Report Period: 06/29/2016 06:00 Through 06/29/2016 06:20  
Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit

Source	UNIT1						SO2#PPM (PPM)	SO2PPM (PPM)	UNITLOAD (MW)
	CO#IHR (LB/IHR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#IHR (LB/IHR)	NOX#MM (LB/MMBTU)			
06/29/16 06:00	22.3	0.309	10.8	254.7	989.5	0.228	114.7	378.4	0.086
06/29/16 06:01	23.0	0.320	10.8	263.3	1,001.2	0.229	115.2	376.2	0.086
06/29/16 06:02	21.5	0.296	10.7	243.1	1,020.9	0.233	115.9	383.0	0.087
06/29/16 06:03	17.7	0.245	10.7	200.7	1,017.9	0.233	116.1	366.7	0.088
06/29/16 06:04	19.0	0.264	10.7	216.6	1,014.1	0.233	115.9	392.6	0.090
06/29/16 06:05	19.5	0.270	10.7	221.7	1,011.3	0.232	115.7	385.9	0.088
06/29/16 06:06	16.6	0.231	10.7	188.3	1,017.0	0.233	115.9	382.7	0.088
06/29/16 06:07	16.2	0.227	10.6	184.7	1,016.8	0.236	116.5	370.4	0.086
06/29/16 06:08	16.1	0.224	10.7	183.0	1,014.5	0.233	116.2	372.1	0.086
06/29/16 06:09	17.5	0.241	10.7	198.2	1,015.3	0.232	115.7	380.1	0.086
06/29/16 06:10	18.0	0.247	10.8	203.5	1,009.0	0.228	114.8	390.6	0.089
06/29/16 06:11	20.3	0.279	10.7	229.2	1,024.6	0.233	116.1	386.1	0.086
06/29/16 06:12	19.4	0.265	10.8	217.9	1,033.1	0.232	116.7	364.2	0.089
06/29/16 06:13	17.0	0.233	10.7	190.6	1,043.5	0.236	117.4	386.4	0.090
06/29/16 06:14	17.6	0.242	10.7	197.4	1,050.7	0.238	118.3	395.7	0.090
06/29/16 06:15	22.8	0.313	10.7	255.5	1,064.0	0.241	120.0	406.8	0.092
06/29/16 06:16	25.4	0.350	10.6	284.7	1,079.3	0.246	121.4	419.3	0.095
06/29/16 06:17	23.9	0.327	10.7	266.8	1,081.7	0.246	122.4	427.5	0.097
06/29/16 06:18	24.6	0.339	10.7	276.2	1,087.4	0.246	122.7	437.0	0.099
06/29/16 06:19	28.1	0.386	10.7	315.7	1,082.7	0.245	122.0	444.3	0.101
06/29/16 06:20	25.4	0.351	10.6	285.0	1,091.2	0.249	122.6	438.5	0.100
									35.5
									485
Average	20.6	0.284	10.7	232.2	1,037.4	0.236	117.7	397.5	0.091
Minimum	16.1	0.224	10.6	183.0	989.5	0.228	114.7	370.4	0.086
Maximum	28.1	0.386	10.8	315.7	1,091.7	0.249	122.7	444.3	0.101
Summation	431.9	5.959	224.8	4,876.8	21,765.7	4,962	2,472.2	8,346.5	1,901
Included Data Points	21	21	21	21	21	21	21	21	21
Total number of Data Points	21	21	21	21	21	21	21	21	21

F = Unit Offline  
E = Exceedance  
M = Maintenance  
T = Out Of Control  
Report Generated: 06/29/16 06:21

C = Calibration  
S = Substituted  
I = Invalid

# Average Data

Plant: HUNTINGTON PLANT

Interval: 1 Minute

Type: Block

Report Period: 06/29/2016 06:39 Through 06/29/2016 06:59  
Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit 1 SO2 RATA

Source	Parameter Unit	UNIT1						SO2PPM (PPM)	SO2/MM (LB/MMBTU)	UNITLOAD (MW)
		CO#IHR (LB/IHR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#IHR (LB/IHR)	NOX#MM (LB/MMBTU)			
06/29/16 06:39	18.0	0.247	10.7	202.4	1,084.2	0.241	119.9	410.6	0.093	33.3
06/29/16 06:40	17.8	0.243	10.8	200.2	1,084.2	0.237	119.2	416.0	0.094	33.8
06/29/16 06:41	20.0	0.275	10.7	225.4	1,047.7	0.238	118.7	409.3	0.093	33.3
06/29/16 06:42	19.2	0.264	10.8	217.6	1,046.9	0.237	119.0	410.6	0.093	33.6
06/29/16 06:43	20.8	0.286	10.8	236.7	1,059.2	0.236	118.5	405.9	0.092	33.4
06/29/16 06:44	27.9	0.382	10.9	317.3	1,019.9	0.230	116.8	414.5	0.094	34.1
06/29/16 06:45	26.4	0.365	10.8	301.4	1,027.7	0.234	117.4	404.6	0.092	33.3
06/29/16 06:46	25.6	0.354	10.8	292.1	1,028.3	0.234	117.6	408.5	0.093	33.6
06/29/16 06:47	20.0	0.278	10.7	227.5	1,033.7	0.237	118.1	397.1	0.091	32.6
06/29/16 06:48	21.2	0.292	10.7	239.6	1,039.0	0.237	118.2	401.5	0.091	32.8
06/29/16 06:49	21.5	0.295	10.8	243.4	1,040.9	0.235	118.3	401.9	0.091	32.8
06/29/16 06:50	23.7	0.322	10.8	266.1	1,057.4	0.237	118.9	404.9	0.091	32.8
06/29/16 06:51	28.7	0.389	10.8	321.4	1,048.9	0.235	118.2	401.3	0.090	32.5
06/29/16 06:52	25.1	0.340	10.8	281.5	1,044.7	0.234	117.8	402.7	0.090	32.6
06/29/16 06:53	25.7	0.349	10.8	289.2	1,038.8	0.234	117.6	402.8	0.090	32.8
06/29/16 06:54	24.8	0.338	10.8	279.6	1,032.2	0.233	117.2	399.6	0.090	32.6
06/29/16 06:55	25.6	0.349	10.9	290.5	1,020.9	0.229	115.9	400.9	0.090	32.8
06/29/16 06:56	23.3	0.320	10.9	265.2	1,011.9	0.228	115.8	396.6	0.090	32.6
06/29/16 06:57	30.2	0.412	10.9	342.8	1,022.0	0.230	116.4	398.3	0.090	32.7
06/29/16 06:58	27.4	0.377	10.8	311.5	1,025.4	0.233	116.9	399.6	0.089	32.0
06/29/16 06:59	21.6	0.301	10.7	246.6	1,018.3	0.234	116.7	380.4	0.087	31.3
Included Data Points		21	21	21	21	21	21	21	21	21
Total number of Data Points		21	21	21	21	21	21	21	21	21

F = Unit Offline  
E = Exceedance  
M = Maintenance  
T = Out Of Control  
Report Generated: 06/29/16 07:00

C = Calibration  
S = Substituted  
I = Invalid

# Average Data R-3

Plant: HUNTINGTON PLANT

Interval: 1 Minute

Report Period: 06/29/2016 07:16 Through 06/29/2016 07:36  
Type: Block  
Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit 1 SO<sub>2</sub> RATA

Source	UNIT1						SO <sub>2</sub> #MM (LB/MMBTU)	SO <sub>2</sub> PPM (PPM)	UNITLOAD (MW)
	CO#IHR (LB/IHR)	CO#MM (LB/MMBTU)	CO <sub>2</sub> (PCT)	COPPM (PPM)	NOX#IHR (LB/IHR)	NOX#MM (LB/MMBTU)			
06/29/16 07:16	23.6	0.330	10.8	271.1	1,004.0	0.231	116.0	394.4	0.081
06/29/16 07:17	25.8	0.362	10.7	297.4	1,007.6	0.234	116.4	395.6	0.081
06/29/16 07:18	24.8	0.343	10.8	284.4	1,013.1	0.232	116.4	406.0	0.083
06/29/16 07:19	27.0	0.370	10.9	308.1	1,013.2	0.229	116.1	417.2	0.084
06/29/16 07:20	28.2	0.384	10.9	320.5	1,017.0	0.229	116.2	422.4	0.085
06/29/16 07:21	27.3	0.372	10.9	309.1	1,026.2	0.230	116.9	422.0	0.085
06/29/16 07:22	29.7	0.406	10.8	336.2	1,027.0	0.232	116.4	427.4	0.086
06/29/16 07:23	26.6	0.369	10.8	304.4	992.3	0.227	114.0	416.0	0.085
06/29/16 07:24	23.9	0.336	10.7	276.3	986.1	0.232	115.6	404.1	0.084
06/29/16 07:25	26.4	0.368	10.8	304.8	980.0	0.228	114.7	410.9	0.084
06/29/16 07:26	24.8	0.343	10.9	285.1	991.5	0.226	114.4	414.9	0.085
06/29/16 07:27	20.9	0.291	10.8	240.2	996.2	0.229	114.9	414.0	0.085
06/29/16 07:28	15.7	0.220	10.7	180.5	989.0	0.232	115.3	410.0	0.085
06/29/16 07:29	16.9	0.236	10.7	194.0	1,003.6	0.233	116.2	418.7	0.087
06/29/16 07:30	17.7	0.247	10.8	203.2	1,006.6	0.231	116.1	430.4	0.089
06/29/16 07:31	22.6	0.313	10.8	289.5	1,010.1	0.231	116.1	435.5	0.100
06/29/16 07:32	30.8	0.422	10.9	360.7	1,011.2	0.228	115.6	454.7	0.103
06/29/16 07:33	34.9	0.472	11.0	366.7	1,005.8	0.224	114.8	469.6	0.105
06/29/16 07:34	21.4	0.293	10.8	243.0	1,009.0	0.229	115.3	455.9	0.103
06/29/16 07:35	21.2	0.292	10.8	241.5	1,012.7	0.231	115.9	445.1	0.101
06/29/16 07:36	22.0	0.302	10.9	251.1	1,013.6	0.229	115.9	444.1	0.101
Average	24.4	0.337	10.8	278.9	1,007.0	0.230	115.7	424.2	0.087
Minimum	15.7	0.220	10.7	180.5	990.0	0.224	114.0	394.4	0.081
Maximum	34.9	0.472	11.0	366.7	1,027.0	0.234	116.9	469.6	0.105
Summation	512.2	7.071	227.2	5,856.8	21,146.0	4,827	2,429.2	8,908.9	2,032
Included Data Points	21	21	21	21	21	21	21	21	21
Total number of Data Points	21	21	21	21	21	21	21	21	21

F = Unit Offline  
E = Exceedance  
M = Maintenance  
T = Out Of Control  
Report Generated: 06/29/16 07:37

C = Calibration  
S = Substituted  
I = Invalid

## Average Data

Plant: HUNTINGTON PLANT

Interval: 1 Minute

Type: Block

Report Period: 06/29/2016 08:10 Through 06/29/2016 08:30

2-4

Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit 1 SO<sub>2</sub> RATA

Source	UNIT1						SO <sub>2</sub> #MM (LB/MMBTU)	SO <sub>2</sub> PPM (PPM)	UNITLOAD (MW)
	CO#IHR (LB/IHR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#IHR (LB/IHR)	NOX#MM (LB/MMBTU)			
06/29/16 08:10	22.7	0.315	10.6	255.5	1,108.2	0.254	125.2	429.2	34.9
06/29/16 08:11	25.1	0.349	10.6	283.7	1,107.3	0.255	125.9	437.0	35.7
06/29/16 08:12	23.4	0.328	10.6	265.2	1,123.6	0.259	127.8	440.2	36.0
06/29/16 08:13	23.2	0.324	10.6	261.9	1,137.4	0.261	128.9	444.7	36.2
06/29/16 08:14	25.6	0.353	10.6	286.3	1,148.9	0.262	129.3	453.6	36.7
06/29/16 08:15	33.7	0.458	10.7	374.7	1,142.8	0.256	127.7	468.7	479
06/29/16 08:16	31.1	0.424	10.6	344.6	1,156.0	0.261	128.5	474.4	480
06/29/16 08:17	36.6	0.498	10.7	407.4	1,143.4	0.257	127.8	482.0	481
06/29/16 08:18	38.2	0.523	10.7	427.0	1,139.3	0.257	127.9	482.8	482
06/29/16 08:19	32.0	0.440	10.6	356.2	1,165.0	0.262	129.3	484.6	484
06/29/16 08:20	31.6	0.434	10.6	350.8	1,160.0	0.262	129.3	486.7	485
06/29/16 08:21	37.2	0.511	10.7	416.6	1,138.2	0.257	127.8	484.8	486
06/29/16 08:22	30.8	0.427	10.6	345.9	1,145.8	0.262	129.1	469.7	481
06/29/16 08:23	28.3	0.390	10.5	314.3	1,165.9	0.266	130.1	460.3	481
06/29/16 08:24	24.3	0.336	10.5	269.3	1,173.3	0.267	130.2	448.9	479
06/29/16 08:25	23.9	0.332	10.5	266.3	1,181.4	0.266	129.9	437.3	485
06/29/16 08:26	31.9	0.442	10.6	366.3	1,192.5	0.262	129.0	440.2	484
06/29/16 08:27	28.9	0.400	10.6	322.4	1,193.5	0.262	129.2	431.9	480
06/29/16 08:28	30.5	0.422	10.5	340.1	1,153.0	0.264	129.0	427.5	480
06/29/16 08:29	25.1	0.347	10.5	279.4	1,196.1	0.265	129.5	422.1	481
06/29/16 08:30	25.6	0.355	10.5	285.7	1,157.8	0.266	130.0	424.9	482
<b>Included Data Points</b>									
Total number of Data Points	21	21	21	21	21	21	21	21	21

F = Unit Offline

E = Exceedance

M = Maintenance

T = Out Of Control

Report Generated: 06/29/16 08:31

C = Calibration  
S = Substituted  
I = Invalid

## Average Data

Plant: HUNTINGTON PLANT  
Interval: 1 Minute  
*μ-5*

Type: Block  
Report Period: 06/29/2016 08:46 Through 06/29/2016 09:06  
Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit

Source	UNIT						SO2#MM (LB/MMBTU)	SO2PPM (PPM)	UNITLOAD (MW)
	CO#HR (LB/HR)	CO#MM (LB/MMBTU)	CO2 (PCT)	CO2PPM (PPM)	NOX#HR (LB/HR)	NOX#MM (LB/MMBTU)			
06/29/16 08:46	19.7	0.269	10.6	218.0	1,164.9	0.263	129.8	405.5	0.082
06/29/16 08:47	22.9	0.316	10.6	255.5	1,159.7	0.264	130.1	406.6	0.083
06/29/16 08:48	24.7	0.340	10.6	275.5	1,161.2	0.264	130.1	410.4	0.083
06/29/16 08:49	31.9	0.434	10.6	352.4	1,192.0	0.286	131.1	415.8	0.083
06/29/16 08:50	27.3	0.369	10.6	300.7	1,192.7	0.265	130.6	429.0	0.086
06/29/16 08:51	28.0	0.382	10.6	308.5	1,189.3	0.267	131.5	428.4	0.087
06/29/16 08:52	28.5	0.390	10.6	317.2	1,166.0	0.264	130.3	440.7	0.089
06/29/16 08:53	34.0	0.463	10.7	360.2	1,158.6	0.261	129.7	451.2	0.101
06/29/16 08:54	37.3	0.508	10.7	416.0	1,159.5	0.261	130.1	455.0	0.103
06/29/16 08:55	26.8	0.372	10.6	300.3	1,179.2	0.269	132.6	446.1	0.102
06/29/16 08:56	19.2	0.270	10.4	215.7	1,184.4	0.276	133.6	420.4	0.098
06/29/16 08:57	23.9	0.336	10.5	269.0	1,160.5	0.269	131.5	401.4	0.093
06/29/16 08:58	22.7	0.318	10.5	255.4	1,165.4	0.269	131.4	394.5	0.091
06/29/16 08:59	25.3	0.350	10.5	282.2	1,178.9	0.270	131.7	395.1	0.090
06/29/16 09:00	31.2	0.426	10.7	347.0	1,169.7	0.262	130.2	405.4	0.081
06/29/16 09:01	38.9	0.527	10.8	433.8	1,154.3	0.257	129.1	411.3	0.082
06/29/16 09:02	33.9	0.462	10.7	377.2	1,166.6	0.262	130.5	401.6	0.080
06/29/16 09:03	32.6	0.446	10.7	363.7	1,174.5	0.264	131.3	405.0	0.081
06/29/16 09:04	31.0	0.431	10.6	348.2	1,171.9	0.268	132.0	393.2	0.080
06/29/16 09:05	33.9	0.475	10.6	384.4	1,149.0	0.265	130.9	381.3	0.088
06/29/16 09:06	27.6	0.383	10.6	310.4	1,157.0	0.265	130.8	388.9	0.089
Average	28.6	0.394	10.6	319.6	1,168.3	0.265	130.9	414.2	0.084
Minimum	19.2	0.269	10.4	215.7	1,149.0	0.257	129.1	381.3	0.088
Maximum	38.9	0.527	10.8	433.8	1,189.3	0.276	133.6	459.0	0.103
Summation	601.3	8.267	222.8	6,711.3	24,553.3	5.571	2,749.0	8,698.8	1,972
Included Data Points	21	21	21	21	21	21	21	21	21
Total number of Data Points	21	21	21	21	21	21	21	21	21

F = Unit Offline  
E = Exceedance  
M = Maintenance  
T = Out Of Control  
Report Generated: 06/29/16 09:07

C = Calibration  
S = Substituted  
I = Invalid

## Average Data

Plant: HUNTINGTON PLANT  
Interval: 1 Minute

Type: Block  
Report Period: 06/29/2016 09:24 Through 06/29/2016 09:44  
Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit 1 SO2 RATA

Source	UNIT 1						UNIT 2				
	CO#HR (LB/HR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#HR (LB/HR)	NOX#MM (LB/MMBTU)	NOXPPM (PPM)	SO2#HR (LB/HR)	SO2#MM (LB/MMBTU)	SO2PPM (PPM)	UNITLOAD (MW)
06/29/16 09:24	28.5	0.394	10.6	320.4	1,184.5	0.271	133.5	438.6	0.100	35.6	485
06/29/16 09:25	21.1	0.286	10.8	236.0	1,176.7	0.263	132.3	459.2	0.103	37.1	488
06/29/16 09:26	13.1	0.179	10.7	145.9	1,195.3	0.269	134.0	445.5	0.100	35.9	489
06/29/16 09:27	15.6	0.214	10.7	173.5	1,169.9	0.265	131.8	448.7	0.102	36.4	489
06/29/16 09:28	14.4	0.200	10.7	164.0	1,138.3	0.261	128.7	445.8	0.102	36.6	485
06/29/16 09:29	14.2	0.197	10.7	161.2	1,135.7	0.260	129.5	452.5	0.103	37.1	479
06/29/16 09:30	19.7	0.274	10.7	224.4	1,132.2	0.260	129.6	454.8	0.104	37.4	473
06/29/16 09:31	30.6	0.428	10.7	349.7	1,145.8	0.264	131.3	454.5	0.105	37.5	470
06/29/16 09:32	22.6	0.314	10.7	256.3	1,156.2	0.265	132.1	467.9	0.107	38.4	471
06/29/16 09:33	22.4	0.308	10.7	252.6	1,162.4	0.264	131.5	489.4	0.111	39.8	476
06/29/16 09:34	20.2	0.275	10.8	226.2	1,175.4	0.263	132.2	498.3	0.112	40.3	482
06/29/16 09:35	27.5	0.370	10.9	307.7	1,181.4	0.262	132.7	517.9	0.115	41.9	484
06/29/16 09:36	23.1	0.314	10.8	259.3	1,193.8	0.266	133.5	501.1	0.112	40.7	486
06/29/16 09:37	26.6	0.361	10.9	299.8	1,173.5	0.262	132.7	498.5	0.112	40.6	486
06/29/16 09:38	28.0	0.392	10.8	315.6	1,176.3	0.265	133.2	482.7	0.109	39.3	485
06/29/16 09:39	21.2	0.291	10.8	239.5	1,166.5	0.268	134.6	464.2	0.105	37.9	484
06/29/16 09:40	20.3	0.279	10.8	230.2	1,178.4	0.267	134.0	459.1	0.104	37.6	482
06/29/16 09:41	20.1	0.276	10.8	227.6	1,172.3	0.265	133.4	452.8	0.102	37.0	482
06/29/16 09:42	22.1	0.301	10.8	249.6	1,171.3	0.264	132.6	450.5	0.101	36.7	482
06/29/16 09:43	30.2	0.409	10.9	341.3	1,197.2	0.261	132.2	446.2	0.100	36.4	484
06/29/16 09:44	27.0	0.367	10.9	305.4	1,160.8	0.260	132.0	438.2	0.098	35.8	485
Average	22.3	0.306	10.8	251.8	1,167.8	0.264	132.3	465.1	0.105	37.9	482
Minimum	13.1	0.179	10.6	145.9	1,132.2	0.260	129.5	458.2	0.098	35.6	470
Maximum	30.6	0.428	10.9	349.7	1,195.3	0.271	134.6	517.9	0.115	41.9	489
Summation	468.5	6.419	226.2	5,288.2	24,523.9	5.545	2,778.4	9,766.4	2,207	796.0	10,127
Included Data Points	21	21	21	21	21	21	21	21	21	21	21
Total number of Data Points	21	21	21	21	21	21	21	21	21	21	21

F = Unit Offline  
E = Exceedance  
M = Maintenance  
T = Out Of Control  
Report Generated: 06/29/16 09:45

C = Calibration  
S = Substituted  
I = Invalid

## Average Data

Plant: HUNTINGTON PLANT  
Interval: 1 Minute

Report Period: 06/29/2016 10:01 Through 06/29/2016 10:21  
Type: Block  
Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit 1

Source	UNIT 1							SO2#MM (LB/MMBTU)	(PPM)	SO2PPM (PPM)	UNITLOAD (MW)
	CO#HR (LB/HR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#HR (LB/HR)	NOX#MM (LB/MMBTU)	NOXPPM (PPM)				
Parameter Unit	CO#HR (LB/HR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#HR (LB/HR)	NOX#MM (LB/MMBTU)	NOXPPM (PPM)				
06/29/16 10:01	27.7	0.381	10.8	314.2	1,159.7	0.263	132.2	517.3	0.118	42.4	495
06/29/16 10:02	34.8	0.484	10.7	398.7	1,151.3	0.265	131.7	498.6	0.115	41.1	489
06/29/16 10:03	25.0	0.354	10.7	288.7	1,128.2	0.264	131.5	482.1	0.113	40.4	480
06/29/16 10:04	17.1	0.243	10.6	196.1	1,140.7	0.267	131.7	460.0	0.108	38.2	470
06/29/16 10:05	18.4	0.262	10.6	211.4	1,128.6	0.264	130.4	450.7	0.106	37.4	462
06/29/16 10:06	25.1	0.357	10.5	287.7	1,112.0	0.262	128.2	446.9	0.105	37.0	463
06/29/16 10:07	28.0	0.396	10.6	320.0	1,126.9	0.262	129.1	454.7	0.106	37.5	469
06/29/16 10:08	24.6	0.345	10.6	280.0	1,155.0	0.268	132.2	456.8	0.106	37.6	474
06/29/16 10:09	26.8	0.373	10.7	305.0	1,166.8	0.266	132.6	462.7	0.106	38.1	476
06/29/16 10:10	37.3	0.519	10.8	428.5	1,147.2	0.262	131.6	466.4	0.107	38.5	479
06/29/16 10:11	38.5	0.531	10.8	438.4	1,146.4	0.261	131.4	469.1	0.107	38.6	481
06/29/16 10:12	29.9	0.413	10.8	339.7	1,148.6	0.261	131.3	462.7	0.106	38.0	481
06/29/16 10:13	29.8	0.413	10.8	339.9	1,140.6	0.260	130.9	455.2	0.104	37.5	482
06/29/16 10:14	36.4	0.500	10.8	412.5	1,144.0	0.259	130.1	469.2	0.106	38.4	484
06/29/16 10:15	36.5	0.524	10.8	432.3	1,153.8	0.259	130.4	472.1	0.106	38.3	485
06/29/16 10:16	47.0	0.646	10.8	531.5	1,146.1	0.259	130.4	462.8	0.105	37.8	486
06/29/16 10:17	60.5	0.837	10.8	600.4	1,127.3	0.257	129.1	461.2	0.105	38.0	485
06/29/16 10:18	53.9	0.741	10.8	613.6	1,125.7	0.256	128.7	463.5	0.105	38.1	483
06/29/16 10:19	40.2	0.555	10.8	466.6	1,141.6	0.259	129.9	456.1	0.104	37.4	481
06/29/16 10:20	40.3	0.559	10.7	465.2	1,148.6	0.262	130.5	443.2	0.101	36.2	480
06/29/16 10:21	44.5	0.612	10.7	499.6	1,165.0	0.264	131.4	453.5	0.103	36.8	480
Average	34.5	0.478	10.7	392.3	1,142.6	0.262	130.7	465.0	0.107	38.3	479
Minimum	17.1	0.243	10.5	196.1	1,112.0	0.256	128.2	443.2	0.101	36.2	462
Maximum	60.5	0.837	10.8	690.4	1,165.0	0.268	132.6	517.3	0.118	42.4	495
Summation	724.3	10,045	225.2	8,238.0	23,984.1	5,500	2,745.3	9,764.8	2,242	803.3	10,065
Included Data Points	21	21	21	21	21	21	21	21	21	21	21
Total number of Data Points	21	21	21	21	21	21	21	21	21	21	21

F = Unit Offline  
E = Exceedance  
M = Maintenance  
T = Out Of Control

C = Calibration  
S = Substituted  
I = Invalid  
Report Generated: 06/29/16 10:23

## Average Data

Plant: HUNTINGTON PLANT

$\Sigma$

Interval: 1 Minute

Type: Block

Report Period: 06/29/2016 10:38 Through 06/29/2016 10:58

Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit 1 SO2 DATA

Source	UNIT1							SO2#MM (LB/MMBTU)	SO2PPM (PPM)	UNITLOAD (MW)
	CO#HR (LB/HR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#HR (LB/HR)	NOX#MM (LB/MMBTU)	NOXPPM (PPM)			
06/29/16 10:38	29.7	0.412	10.6	333.1	1,191.3	0.272	134.0	440.8	0.101	35.7
06/29/16 10:39	36.0	0.483	10.6	400.0	1,201.4	0.272	134.0	458.2	0.103	36.8
06/29/16 10:40	31.1	0.421	10.7	343.1	1,195.0	0.266	132.5	485.5	0.109	38.7
06/29/16 10:41	34.1	0.470	10.5	377.3	1,205.6	0.274	133.7	490.8	0.112	39.2
06/29/16 10:42	35.8	0.494	10.5	396.8	1,199.7	0.273	133.3	486.5	0.110	38.9
06/29/16 10:43	33.1	0.453	10.6	367.0	1,197.3	0.270	133.4	480.0	0.108	38.4
06/29/16 10:44	25.2	0.346	10.6	280.0	1,204.0	0.272	134.2	476.6	0.108	38.2
06/29/16 10:45	18.0	0.248	10.5	199.6	1,210.6	0.276	134.6	468.1	0.107	37.5
06/29/16 10:46	19.2	0.268	10.4	213.7	1,210.3	0.280	135.3	450.8	0.104	36.3
06/29/16 10:47	23.5	0.330	10.5	264.4	1,195.7	0.274	134.0	443.3	0.103	36.0
06/29/16 10:48	21.5	0.303	10.4	242.2	1,182.8	0.277	133.8	430.6	0.100	35.1
06/29/16 10:49	22.4	0.314	10.5	261.7	1,183.3	0.273	133.4	430.5	0.100	34.9
06/29/16 10:50	26.6	0.371	10.5	297.8	1,183.8	0.272	132.7	431.0	0.098	34.8
06/29/16 10:51	30.1	0.420	10.5	371.1	1,178.0	0.271	132.5	421.8	0.097	34.1
06/29/16 10:52	31.7	0.440	10.5	353.5	1,187.5	0.272	132.9	421.2	0.097	33.9
06/29/16 10:53	37.2	0.512	10.6	412.8	1,195.9	0.270	133.3	432.0	0.098	34.6
06/29/16 10:54	33.5	0.458	10.6	370.5	1,202.6	0.271	133.7	441.5	0.100	35.3
06/29/16 10:55	21.8	0.300	10.5	241.3	1,222.8	0.278	135.7	438.1	0.099	35.0
06/29/16 10:56	28.6	0.384	10.6	294.7	1,223.9	0.276	135.9	438.7	0.099	35.1
06/29/16 10:57	25.9	0.350	10.7	285.6	1,226.1	0.273	135.7	452.8	0.101	36.1
06/29/16 10:58	21.3	0.280	10.6	233.8	1,245.3	0.279	137.8	442.9	0.100	35.2
										486
Average	27.8	0.384	10.5	309.3	1,201.6	0.273	134.1	450.6	0.103	36.2
Minimum	18.0	0.248	10.4	189.6	1,178.0	0.266	132.5	421.2	0.097	33.9
Maximum	37.2	0.512	10.7	412.8	1,245.3	0.280	137.8	490.8	0.112	39.2
Summation	584.3	8.057	221.5	6,496.0	25,232.8	5.741	2,816.4	9,461.7	2,155	759.8
Included Data Points	21	21	21	21	21	21	21	21	21	21
Total number of Data Points	21	21	21	21	21	21	21	21	21	21

F = Unit Offline  
E = Exceedance  
M = Maintenance  
T = Out Of Control

C = Calibration  
S = Substituted  
I = Invalid

Report Generated: 06/29/16 11:16

## Average Data

Plant: HUNTINGTON PLANT

Interval: 1 Minute

Type: Block  
Report Period: 06/29/2016 11:14 Through 06/29/2016 11:34  
Time Online Criteria: 1 minute(s)

Project PC16-0031: Huntington Unit

Source	Parameter Unit	UNIT 1						SO2#MM (LB/MMBTU)	SO2PPM (PPM)	UNIT LOAD (MW)
		CO#HR (LB/HR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#HR (LB/HR)	NOX#MM (LB/MMBTU)			
6/29/16 11:14	15.4	0.212	10.5	169.7	1,255.5	0.285	139.2	425.0	0.096	33.9
6/29/16 11:15	18.5	0.255	10.5	205.4	1,229.1	0.280	135.7	426.0	0.097	34.1
6/29/16 11:16	19.1	0.264	10.5	212.4	1,236.2	0.282	137.7	422.9	0.096	33.9
6/29/16 11:17	24.9	0.343	10.6	276.9	1,284.4	0.280	138.2	423.9	0.096	34.0
6/29/16 11:18	26.1	0.358	10.6	289.7	1,288.2	0.280	138.2	428.8	0.097	34.4
6/29/16 11:19	24.0	0.332	10.6	288.1	1,228.5	0.280	138.2	413.1	0.094	33.4
6/29/16 11:20	22.4	0.308	10.6	249.1	1,234.6	0.280	138.0	417.6	0.095	33.6
6/29/16 11:21	24.9	0.340	10.6	275.8	1,237.8	0.279	137.6	425.2	0.096	34.0
6/29/16 11:22	26.4	0.363	10.6	293.6	1,223.6	0.277	136.6	419.6	0.095	33.7
6/29/16 11:23	29.8	0.412	10.6	333.5	1,207.5	0.275	135.6	423.3	0.097	34.2
6/29/16 11:24	34.1	0.471	10.6	382.9	1,199.8	0.274	135.2	425.8	0.097	34.5
6/29/16 11:25	36.9	0.507	10.6	412.6	1,193.4	0.272	134.3	435.3	0.098	35.2
6/29/16 11:26	38.2	0.525	10.6	426.9	1,204.1	0.274	135.1	443.5	0.101	35.8
6/29/16 11:27	41.3	0.566	10.6	460.4	1,198.2	0.272	134.1	492.0	0.102	36.4
6/29/16 11:28	38.6	0.525	10.7	427.7	1,220.6	0.273	135.8	485.7	0.105	37.3
6/29/16 11:29	35.7	0.487	10.6	385.2	1,222.9	0.276	136.0	482.1	0.104	37.0
6/29/16 11:30	32.6	0.449	10.6	362.5	1,222.3	0.277	136.5	491.5	0.103	36.3
6/29/16 11:31	36.0	0.497	10.5	400.7	1,222.6	0.280	136.7	484.8	0.104	36.6
6/29/16 11:32	27.6	0.382	10.5	307.5	1,222.1	0.280	136.9	448.4	0.103	36.1
6/29/16 11:33	25.4	0.355	10.5	284.3	1,222.0	0.281	137.1	429.4	0.099	34.7
6/29/16 11:34	24.6	0.344	10.5	276.5	1,214.1	0.280	136.7	429.4	0.099	34.8
										480
Average	28.7	0.395	10.6	319.6	1,222.5	0.278	136.7	434.4	0.099	34.9
Minimum	15.4	0.212	10.5	169.7	1,193.4	0.272	134.1	413.1	0.094	33.4
Maximum	41.3	0.566	10.7	460.4	1,255.5	0.285	139.2	485.7	0.105	37.3
Summation	692.5	8.295	222.0	6,711.4	25,671.5	5,837	2,870.4	9,123.3	2,075	733.9
Included Data Points	21	21	21	21	21	21	21	21	21	21
Total number of Data Points	21	21	21	21	21	21	21	21	21	21

F = Unit Offline

E = Exceedance

M = Maintenance

T = Out Of Control

Report Generated: 06/29/16 11:40

C = Calibration  
S = Substituted  
I = Invalid

# Average Data

Plant: HUNTINGTON PLANT

Interval: 1 Minute

Type: Block  
Report Period: 06/29/2016 11:52 Through 06/29/2016 12:12  
Time Online Criteria: 1 minute(s)

Source	UNIT1								SO2#MM (LB/MMBTU)	SO2PPM (PPM)	UNITLOAD (MW)
	CO#HHR (LB/HHR)	CO#MM (LB/MMBTU)	CO2 (PCT)	COPPM (PPM)	NOX#HHR (LB/HHR)	NOX#MM (LB/MMBTU)	NOXPMM (PPM)	SO2#HHR (LB/HHR)			
06/29/16 11:52	20.8	0.289	10.5	231.2	1,236.6	0.282	137.7	433.0	0.099	34.7	482
Huntington Unit 1 SO2 RATA 06/29/16 11:53	21.0	0.291	10.5	233.5	1,233.0	0.282	137.6	436.7	0.100	35.1	481
06/29/16 11:54	20.2	0.284	10.4	226.2	1,218.9	0.283	137.0	433.1	0.101	35.0	481
06/29/16 11:55	28.2	0.399	10.4	316.7	1,203.8	0.280	135.6	438.5	0.102	35.5	483
06/29/16 11:56	18.5	0.259	10.4	205.4	1,215.6	0.280	135.5	442.8	0.102	35.5	485
06/29/16 11:57	15.5	0.214	10.4	171.3	1,196.2	0.275	133.2	453.6	0.104	36.3	485
06/29/16 11:58	10.2	0.144	10.4	114.6	1,198.1	0.278	134.5	438.3	0.102	35.4	482
06/29/16 11:59	15.0	0.210	10.4	167.8	1,189.8	0.277	133.9	430.7	0.100	34.9	484
06/29/16 12:00	17.2	0.241	10.5	193.7	1,181.9	0.273	133.4	443.5	0.102	36.0	478
Huntington Unit 1 SO2 RATA 06/29/16 12:01	11.9	0.168	10.4	134.3	1,183.2	0.276	133.4	421.2	0.098	34.2	473
06/29/16 12:02	10.9	0.152	10.5	121.9	1,176.4	0.271	132.3	421.2	0.097	34.1	472
06/29/16 12:03	14.2	0.198	10.5	159.5	1,159.4	0.268	130.7	419.8	0.097	34.1	474
06/29/16 12:04	12.8	0.179	10.6	144.4	1,150.2	0.265	130.8	420.9	0.097	34.4	474
06/29/16 12:05	15.8	0.221	10.6	179.3	1,154.1	0.266	131.0	423.2	0.098	34.6	474
06/29/16 12:06	16.0	0.223	10.6	180.7	1,154.3	0.265	130.7	419.9	0.096	34.2	478
06/29/16 12:07	15.9	0.220	10.6	178.7	1,150.7	0.264	130.2	420.2	0.096	34.2	481
06/29/16 12:08	19.8	0.274	10.7	223.8	1,143.1	0.260	129.5	427.3	0.097	34.8	480
06/29/16 12:09	19.0	0.261	10.7	213.9	1,142.7	0.260	129.6	432.0	0.098	35.2	479
06/29/16 12:10	15.9	0.219	10.7	179.3	1,161.5	0.264	131.6	426.3	0.097	34.7	480
06/29/16 12:11	17.9	0.248	10.7	202.5	1,152.0	0.263	130.9	420.8	0.096	34.4	480
06/29/16 12:12	27.6	0.380	10.8	314.3	1,126.2	0.256	128.8	429.7	0.098	35.3	480

Project PC16-0031: Huntington Unit 1 SO2 RATA

Average  
Minimum  
Maximum  
Summation  
Included Data Points  
Total number of Data Points

17.3  
10.2  
28.2  
384.3  
21  
21

0.242  
0.144  
0.399  
5.074  
21  
21

194.9  
114.6  
316.7  
4,093.0  
21  
21

10.5  
10.4  
10.8  
221.3  
21  
21

1,177.5  
1,126.2  
1,236.6  
24,727.7  
21  
21

0.271  
0.256  
0.283  
5,688  
21  
21

132.8  
128.8  
137.7  
2,787.9  
21  
21

430.1  
419.8  
453.6  
9,032.7  
21  
21

0.099  
0.096  
0.104  
2,077  
21  
21

F = Unit Offline  
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M = Maintenance  
T = Out Of Control  
C = Calibration  
S = Substituted  
I = Invalid

Report Generated: 06/29/16 12:13

# **EPA Protocol 1 Gas Certificates**

500 Weaver Park Rd, Longmont, CO 80501

Phone: 303-651-3094

Fax: 303-772-7673

## CERTIFICATE OF ACCURACY : EPA Protocol Gas

Customer:  
**EMISSIONS MEASUREMENT COMPANY LLC**  
EMISSIONS MEASUREMENT COMPANY LLC  
11990 W 52nd Ave  
Wheat Ridge, CO 80033-2030  
US

Assay Laboratory - PGVP Vendor ID: A42015  
Air Liquide America Specialty Gases LLC  
500 Weaver Park Rd  
Longmont, CO 80501

Lot No: 301455  
P.O. No.: Matt Parks  
Folio #: 63 PPM SO<sub>2</sub>/N2  
Sales Order #: 2035970

## ANALYTICAL INFORMATION

Gas Type : SO<sub>2</sub>,BALN

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G -1, EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: ALM059862

Certification Date: 27Oct2015

Expiration Date: 28Oct2023

Cylinder Pressure: 1900 PSIG

Lot No: 301455

Component Name	Concentration (Mole)	Accuracy (Absolute / Relative)
SULFUR DIOXIDE	62.9 PPM	0.6 PPM
NITROGEN	BALANCE	/ 1.0 %

## TRACEABILITY

## Analytical Traceability

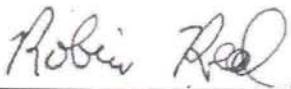
## Reference Standard

Component	Concentration	Uncertainty	Cylinder	Type	Exp. Date
SULFUR DIOXIDE	100.4000 PPM	0.8 PPM	KAL003548	NTRM 1694	24Jan2018

## ANALYTICAL METHOD

1st Analysis: 10/20/2015				
COMPONENT	INSTRUMENT	ANALYTICAL PRINCIPLE	CALIBRATED	CONCENTRATION
SULFUR DIOXIDE	MKS 2030 929062	Fourier Transform Infrared	09/25/2015	62.875 PPM
2nd Analysis: 10/27/2015				
COMPONENT	INSTRUMENT	ANALYTICAL PRINCIPLE	CALIBRATED	CONCENTRATION
SULFUR DIOXIDE	MKS 2030 929062	Fourier Transform Infrared	09/25/2015	63.011 PPM

APPROVED BY:



DATE: 27Oct2015

ROBIN REED – LAB TECHNICIAN



500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673

## RATA CLASS

*Guaranteed +/- 1% Accuracy*

## CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A42014

AIR LIQUIDE AMERICA SPECIALTY GASES LLC  
500 WEAVER PARK RD  
LONGMONT, CO 80501

P.O. No.: MATT PARKS  
Document #: 58676625-004  
Folio #:145 PPM SO2/N2

### Customer

EMISSIONS MEASUREMENT COMPANY LLC  
11990 W. 52ND  
WHEAT RIDGE CO 80033  
US

### ANALYTICAL INFORMATION

### Gas Type : SO<sub>2</sub>,BALN

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards;  
Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

**Cylinder Number:** CC279462  
**Cylinder Pressure:** 1900 PSIG

**Certification Date:** 22Aug2014

**Exp. Date:** 23Aug2022  
**Batch No:** LGM0143792

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY (ABSOLUTE / RELATIVE)
SULFUR DIOXIDE	148 PPM	1.2 PPM / 0.8 %
NITROGEN	BALANCE	

### TRACEABILITY

REFERENCE STANDARD	CONCENTRATION	UNCERTAINTY	CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
COMPONENT SULFUR DIOXIDE	255.5000 PPM	2.0000 PPM	KAL003932	NTRM 0260/031407	05Jan2018

### ANALYTICAL METHOD

#### 1st Analysis: 15Aug2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
SULFUR DIOXIDE	MKS ONLINE/2030/0929062	FTIR	13Aug2014	147.9 PPM

#### 2nd Analysis: 22Aug2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
SULFUR DIOXIDE	MKS ONLINE/2030/0929062	FTIR	13Aug2014	147.6 PPM

### QUALITY ASSURANCE

APPROVED BY: ROBIN REED  
(signature on file)

**RE: Certification of Air Emission Testing Body (AETB) Conformance**

To Whom it May Concern:

This letter is to confirm that Emissions Measurement Company LLC ("EMCo") is an Air Emission Testing Body (AETB) operating in conformance with ASTM D7036-04, as required by 40 CFR Part 75, Appendix A §6.1.2. The table below lists the EPA Reference Methods for which each listed Project Manager is a Qualified Individual and other relevant information required by (as applicable) 40 CFR Part 75.59(a)(15), 40 CFR Part 75.59(b)(6) and 40 CFR Part 75.59(d)(4).

<b>Emissions Measurement Company (800) 984-9883</b>					
<b>AETB Qualified Individual Information</b>					
QI Name	QI Email	Exam*	Exam Date	Exam Provider	Provider Email
<b>Andrew Bruning</b>	abruning@stacktest.us	SES Group 1	6/12/2014	SES	QSTIprogram@gmail.com
		SES Group 2	9/18/2015		
<b>Mike Corrigan</b>	mcorrigan@stacktest.us	SES Group 3	6/12/2015	Ohio-Lumex	andrew.mertz@ohiolumex.com
		EPA Method 30B	1/16/2015*		
<b>Craig Kormylo</b>	ckormylo@stacktest.us	SES Group 1	4/1/2015	SES	QSTIprogram@gmail.com
<b>Matthew Parks</b>	mparks@stacktest.us	SES Group 3	2/5/2016	Ohio-Lumex	andrew.mertz@ohiolumex.com
		EPA Method 30B	1/16/2015*		
*The Source Evaluation Society (SES) Group 1 Exam includes EPA Reference Methods 1, 1A, 2, 2A, 2C, 2D, 2F, 2G, 2H, 3, 3B, 4, 5, 5A, 5B, 5D, 5E, 5F, 5I, 17, 19, 201A and 202. The SES Group 2 Exam includes EPA Reference Methods 1, 2, 3, 4, 3B, 6, 6A, 6B, 7, 7C, 7D, 8, 11, 13A, 13B, 15A, 16A, 19, 26, 26A and 202. The SES Group 3 Exam includes EPA Reference Methods 3A, 6C, 7E, 10, 10B, 20, 25A, 40 CFR Part 60 Performance Specifications 2 – 8, 15 and <u>40 CFR Part 75</u> . Initial 30B training provided by Ohio-Lumex; refresher exam administered by EMCo once every five years.					

Please feel free to contact me with any questions regarding the above.



Matthew Parks  
Technical Director